OCTOBER 9, 1937

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229.

No. XV., OF VOL. II., 1937. LONDON, SATURDAY, OCTOBER 9, 1937. Pp. 128—Price 1s.
No. 5954. VOL. CCXXXIII. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s.

OBESITY.
A PRACTICAL HANDBOOK FOR PHYSICIANS.
By W. F. CHRISTIE, M.D.
The Author has analysed his case records of the last 200 obese subjects treated in private practice and the results of that analysis are given throughout the text.
Demy 8vo. Illustrated. 12s. 6d. net.
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

129 Illustrations (10 Coloured). 12s. 6d. net; postage 6d.
DISEASES OF THE TESTICLE.
By HAMILTON BAILEY, F.R.C.S.
"... all that anyone need know on the subject. . ."—*Lancet.*
London: H. K. Lewis & Co., Ltd., 136 Gower-street, W.C.1.

FRACTURES.
By MEURICE SINCLAIR, C.M.G., M.B., CH.B. (EDIN.).
With an Introduction by Sir ROBERT JONES, Bt., F.R.C.S.
Pp. 550. 337 X ray photographs, photographs and diagrams. 24s. net.
Constable & Co., Ltd., London.

PRINCIPLES OF MEDICAL STATISTICS
By A. BRADFORD HILL, D.Sc., Ph.D.
Pp. 172+viii. 6s. net.
See special announcement, page 2.
Published by THE LANCET LTD., 7, Adam-street, Adelphi, W.C.2.

2nd Ed., fully revised, in 1 Vol., 854 pp. 811 Illustrations.
EMERGENCY SURGERY. 50s. net; postage 8d.
By HAMILTON BAILEY, F.R.C.S.
BRISTOL: JOHN WRIGHT & SONS LTD. LONDON: SIMPKIN.

By H. CRICHTON-MILLER, M.A., M.D., M.R.C.P.
Hon. Senior Physician, Inst. of Med. Psychology.
INSOMNIA. An Outline for the Practitioner.
Edward Arnold & Co., 41–43, Maddox-st., W.1. Price 10s. 6d.
PSYCHO-ANALYSIS AND ITS DERIVATIVES.
Thornton Butterworth, Ltd., 15, Bedford-st., W.C.2. Price 2s. 6d.

Second Revised Edition. 82 Illustrations. 30s. net.
CANCER OF THE BREAST
AND ITS TREATMENT
By W. SAMPSON HANDLEY, M.S., F.R.C.S.
John Murray, Albemarle-street, W.

BY KENNETH M. WALKER, F.R.C.S., M.A., M.B., B.C.
THE ENLARGED PROSTATE.
New and Enlarged Edition. Pp. 223. Coloured Plate and 62 Illustrations. Price 14s. net. (Oxford University Press.)
SEX DIFFICULTIES IN THE MALE. 5s. net. (Second Edition.) (Jonathan Cape.)
PREPARATION FOR MARRIAGE. (Jonathan Cape.)

Works by ALEX. E. ROCHE, M.A., M.D., M.Ch., F.R.C.S.
UROLOGY IN GENERAL PRACTICE
3 Coloured Plates and 40 Figures. Demy 8vo.
17s. 6d. net; postage 6d. (*General Practice Series.*)
"Mr. Roche not only knows what the practitioner requires, but manages to supply it in an interesting manner, and in excellent English."—LANCET.

PYELOGRAPHY
With an Introduction by SIR JOHN THOMSON-WALKER, F.R.C.S.
With 16 Plates. Demy 8vo. 9s. net; postage 6d.
"... will be of great use . . . of interest and value."—B.M.JNL.
London: H. K. Lewis & Co., Ltd., 136, Gower-street, W.C.1.

FAMOUS TEXTBOOKS
PUBLISHED BY SAUNDERS
See Advertising Page 3.

DISEASES OF THE THYROID GLAND.
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully Illustrated. £3 3s. net.
"No praise is too high for the author of this great book. It must be considered as the standard work on thyroid disease. Its pages summarise all that is known of this most interesting subject at the present day."—WEST LONDON MEDICAL JOURNAL.
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

Fourth Edition. Completely revised. 10s. 6d. net.
TREATMENT OF DISEASES OF THE SKIN
By KNOWSLEY SIBLEY, M.A., M.D., B.Ch. (Camb.)
London: Edward Arnold & Co., 41 and 43 Maddox-street, W.1.

2nd Edn. 700 pp. 14 Plates. 297 Illus. 30s. net, post 6d.
CYSTOSCOPY AND UROGRAPHY
By JAS. B. MACALPINE, F.R.C.S.
"A credit to British surgery."—BRIT. JNL. OF SURGERY.
Bristol: John Wright & Sons Ltd. London: Simpkin Marshall Ltd.

THE CLINICAL INTERPRETATION OF AIDS
TO DIAGNOSIS.
Vols. I and II. Price 10s. 6d. each. Postage extra.
Volume I.—"Each of the 45 Sections included in the book is contributed by an experienced worker. . . ."
Volume II.—"We may say that the success of the first volume is here repeated. . . ."—BRITISH MEDICAL JOURNAL.
"Physicians and surgeons cannot afford to omit the knowledge here outlined. . . ."—BIRMINGHAM MEDICAL REVIEW.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

Five New Books

DISORDERS OF THE BLOOD
By L. E. H. WHITBY, C.V.O., M.C., M.D., F.R.C.P., and C. J. C. BRITTON, M.D., D.P.H., Assistant Pathologists, The Bland-Sutton Institute of Pathology, The Middlesex Hospital.
New (2nd) Edition. 12 Plates (8 Coloured) and 60 Text-figures. 21s.

MEDICINE: Essentials for Practitioners and Students. By G. E. BEAUMONT, D.M., F.R.C.P. *New (3rd) Edition.* 74 Illustrations. 21s.

CHEMICAL METHODS IN CLINICAL MEDICINE. By G. A. HARRISON, M.D., B.Ch., M.R.C.S., L.R.C.P. *New (2nd) Edition.* 3 Coloured Plates and 86 Text-figures. 21s.

THE SCIENCE AND PRACTICE OF SURGERY
By W. H. C. ROMANIS, M.B., F.R.C.S., and PHILIP H. MITCHINER, M.S., F.R.C.S. *New (6th) Edition.* 800 Illustrations. Two Volumes. 28s.

APPLIED PHARMACOLOGY
By A. J. CLARK, M.C., M.D., F.R.C.P. *New (6th) Edition.* 83 Illustrations. 18s.

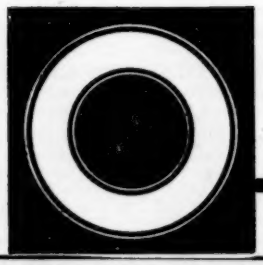
J. & A. CHURCHILL Ltd., 104 Gloucester Place, LONDON W.1

TO REVERSE MENOPAUSAL CHANGES

"I cannot refrain from mentioning the treatment of the MENOPAUSAL SYNDROME with œstrin. Quite small quantities of œstrin by mouth (1,000 to 5,000 units) are usually sufficient to control the hot flushes, headaches and dizziness, and to induce a remarkable feeling of well-being; and rather larger doses have a miraculous effect on such sequelæ as pruritus vulvæ, atrophic senile vaginitis, vaginal ulceration and kraurosis."

PROC. ROY. SOC. MED. JANUARY, 1937. p 276

Samples and literature gladly sent on request



MENFORMON TABLETS

ORGANON LABORATORIES

Standardised biological products

I GORDON SQUARE, LONDON, W.C.I

Telegrams : Menformon, Westcent, London. *Telephone : Museum 2857*

Organon India : P.O. Box 817, Bombay. *Australia : F. H. Faulding & Co. Ltd.*
S. Africa : Heynes Mathew Ltd., P.O. Box 242, Cape Town. *New Zealand : Dominion Dental Supplies Ltd.*

Valentine's Meat-Juice

In **Hospital** and **Private Practice** and **in their own persons** when ill, **Physicians** have **demonstrated** the **power** of **Valentine's Meat-Juice** to **Sustain** and **Strengthen** the weakened **Vital Forces** when the **Digestive Organs** are **Impaired.**

Debility, Exhaustion and Anæmia

Ross H. Skillern, M.D., *Laryngologist, Rush Hospital for Consumption, Philadelphia, Pa.* : "I, myself, had the misfortune to be seized with an attack of Cerebro-spinal Meningitis and after a critical illness recovered. My mainstay during the attack was VALENTINE'S MEAT-JUICE, and I can assure it materially aided in my recovery."

For Sale by European and American Chemists and Druggists

VALENTINE'S MEAT-JUICE COMPANY

A-34 **RICHMOND, VIRGINIA, U.S.A.**

OCTOBER 9, 1937

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 5954 LONDON: SATURDAY, OCTOBER 9, 1937 CCXXXIII

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

Injection Treatment of Inguinal Hernia. By A. E. PORRITT, F.R.C.S. 835
Gold Treatment of Arthritis. By Prof. S. J. HARTFALL, M.R.C.P., H. G. GARLAND, M.R.C.P. and W. GOLDIE, M.R.C.P. —(*Concluded*) 838
Absorption and Excretion of Œstrone by the Human Organism. By T. KEMP, M.D., and K. PEDERSEN-BJERGAARD. — (*With charts*) 842
Transformation of Male Sex Hormones into a Substance with the Action of a Female Hormone. By Prof. E. STEINACH and Dr. H. KUN 845
Macroscopic Agglutination Test for Diagnosis of Weil's Disease. By J. SMITH, M.R.C.P., and Prof. W. J. TULLOCH, M.D. 846
Control of Post-operative Urinary Retention with Doryl. By R. OFFICER, M.B. and J. C. STEWART, F.R.C.S. 850

CLINICAL AND LABORATORY NOTES

Diphtheritic Hemiplegia. By J. M. KENNEDY, M.B. 851
Liver Abscess Caused by Hæmolytic *Staphylococcus aureus*. By S. O. AYLETT, F.R.C.S. 852
Avertin and Paraldehyde as Basal Narcotics for Children. By R. BINNING, M.R.C.S. 852

REVIEWS AND NOTICES OF BOOKS

An Outline of General Physiology. By L. V. Heilbrunn 853
Recent Advances in the Study of Rheumatism. By F. J. Poynton, F.R.C.P., and B. Schlesinger, F.R.C.P. 853
Clinical Electrocardiography. By Sir Thomas Lewis, F.R.C.P., F.R.S. 854
Legal Medicine and Toxicology. By T. A. Gonzales, M.D., and others .. 854
Zehn Vorlesungen über Kymographie. By Prof. P. Stumpf 854
Röntgenkymographische Bewegungslehre Innerer Organe. By Prof. Stumpf and others 854
Pocket Atlas of Anatomy. By V. Pauchet and S. Dupret 855
Manual of Cosmetics. By C. Lázár, M.D. 855
Handbook of Microscopical Technique. Edited by Prof. C. E. McClung, Ph.D. 855
Die inneren Erkrankungen im Alter. By Prof. A. Müller-Deham 856

LEADING ARTICLES

UNITS IN A HEALTH CAMPAIGN 857
TREATMENT WITH GOLD .. 858
POLITICS IN THE HOSPITAL 858

ANNOTATIONS

Chemical Prophylaxis for Poliomyelitis 859
X Ray Kymography 859
Iron Metabolism 860
Undulant Fever in Sweden 860
At the Bedside 861
The Patron Saints of Pharmacy 861
The Vitamin Content of Various Foods 861
Deaf Motorists 862
The Venal Doctor 862
Rheumatism Research Centres 862
China 863
"Q Fever" 863
Smokeless Zones 864
County Homes for Cancer 864

PANEL AND CONTRACT PRACTICE

"Ask Your Doctor" 875

GRAINS AND SCRUPLES

From a Genito-urinary Surgeon (II) 878

NEW INVENTIONS

High-pressure Infiltration Apparatus for Local Anæsthesia. By W. WILLWAY, F.R.C.S.—(*Illus.*) 856

OPENING OF THE MEDICAL SCHOOLS

Temptations and Privileges of Medicine. By H. L. EASON, F.R.C.S. 865
What Should the Doctor be Taught? By W. R. HALLIDAY, LL.D. 866
The Doctor through the Patient's Eyes. By Sir SEYMOUR HICKS 868
"And Even Now." By Sir A. WEBB-JOHNSON, F.R.C.S. 869

POST-GRADUATE LECTURES

The Common Anæmias (Dr. L. E. H. WHITBY) (*Illus.*) 871
The Arches of the Feet (Mr. NORMAN LAKE, F.R.C.S.) 872
Prognosis in Delirious States (Dr. DESMOND CURRAN) 873

SPECIAL ARTICLES

Australasia: The National Health—Post-graduate Education in New South Wales 876
Medicine and the LAW: "Under the Influence of Drink or a Drug"—Removal of Injured Patient 877
Infectious Disease in England and Wales 889

THE LANCET 100 Years Ago 879

CORRESPONDENCE

Health of Medical Students (Prof. J. S. B. Stopford, M.D., F.R.S.) 880
Latent Syphilis (Dr. Griffith Evans, F.R.C.S.) .. 880
Registered Masseurs (Dr. J. Mennell) 880
Road Accidents as a Problem of Preventive Medicine (Wing Commander Stanley Turner, M.D.) 881
Identical Twins (Dr. Irene Yates) 881
Radiodermatitis and Cancer (Dr. F. Hernaman-Johnson) 882
Deafness: Prevention versus Palliation (Mr. Macleod Yearsley, F.R.C.S.) 882
Nasal Sinusitis in Childhood (Mr. J. Crooks, F.R.C.S.) 882
Meal-time Polemics (Dr. J. B. McDougall) 882
Brucea sumatrana in Amœbic Dysentery (Burroughs Wellcome and Co.) 882
Relief of Distress in China 882

THE SERVICES

Royal Naval Medical Service — Army Medical Services — Royal Army Medical Corps — Royal Air Force — Indian Medical Service—Deaths in the Services 883

OBITUARY

James Macpherson Lawrie, M.D. 884
Dr. Carl Spengler 884

MEDICAL NEWS

Hospital Dinners: St. Bartholomew's—Charing Cross—St. George's—St. Mary's — Middlesex — Westminster 884
University of London 886
University of Glasgow 886
London Society 886
London Hospital 886
Royal Institute of Public Health and Hygiene ... 886
William Mackenzie Medal 886
Fellowship of Medicine ... 886
Gresham College 887
Food Education Society .. 887
Psychiatric Demonstrations at St. George's 887
British Postgraduate Medical School 887
Hospital School for Rheumatic Children 887
Broadcast Talks 887

NOTES, COMMENTS, AND ABSTRACTS

Carbuncles 890
Home Traffic in Dangerous Drugs 890
New Preparations: Thrombin - Coagulant - Maw—Mandecal — Iodotab — "Tabloid" Ferrous Chloride Citrated 890

Appointments 887
Medical Diary—Vacancies 888
Births, Marriages, Deaths 889

JOHN BALE, SONS & CURNOW, LTD.

A COMPENDIUM OF THE PHARMACOPŒIAS AND FORMULARIES (Official and Unofficial) with Practical Aids to Prescribing and Dispensing. 7th Edition. 1933.
By C. J. S. THOMPSON, M.B.E. Pp. ix + 381. Flexible leather, red edges, gold lettered. 10s. 6d. net; post free 11s. 3d.
A Handy Pocket Book of Reference for Medical Practitioners.

ARTIFICIAL CRANIAL DEFORMATION: A Contribution to the Study of Ethnic Mutilations. By Dr. E. J. DINGWALL.
55 Full Page Plates. 90 Illus. 5 Maps. Post free £3 12s. 1931.
"... this able and comprehensive Monograph."—BRIT. MED. JOUR.

NEW POCKET MONOGRAPH. 1937.

FAILURE OF THE HEART AND CIRCULATION.
By TERENCE EAST, M.A., D.M., F.R.C.P. Post free 2s. 8d.
"... contains an enormous amount of information."—MED. WORLD.

BEDSIDE MANNERS. By CHRISTOPHER HOWARD, M.R.C.S. Eng., L.R.C.P. Lond. Post free 3s. 10d. 1932.
"There must be few medical men who will not thoroughly enjoy a few hours with this little book."—LANCET.

ALLERGY IN RELATION TO LYMPHADENOMA.
By G. P. CHANDLER, M.D. Camb., M.R.C.P. Post free 11s. 1934.
"A careful bit of work and well worthy of publication in monographic form."—JOURNAL OF PATHOLOGY.

THE CURE OF HÆMORRHOIDS AND VARICOSE VEINS.
A PRACTICAL GUIDE TO MODERN METHODS OF INJECTION AND BANDAGING. By STEWART MCAUSLAND, B.A. Lond., M.D., Ch.B. Lis., M.R.C.S. Eng., L.R.C.P. Lond. 2nd Edition. With Illus. Post free 4s. 4d. 1934.
"This book is well written, there are some good illustrations, and the teaching is practical."—BRITISH MEDICAL JOURNAL.

MANUAL OF EMERGENCIES. Their Pathology, Diagnosis and Treatment. By J. SNOWMAN, M.D., M.R.C.P. Lond. 3rd Edition. Post free 10s. 6d. 1936.
Considerable changes have been made in the third edition of this work in order to make it of real practical value to the Practitioner in emergencies.
"We are convinced that no general practitioner who has seen this work would willingly be without it."—POST-GRADUATE MED. JOURNAL.

83-91, GREAT TITCHFIELD ST., LONDON, W.1

Principles of Medical Statistics

BY

A. BRADFORD HILL, D.Sc., Ph.D.

Reader in Epidemiology and Vital Statistics in the University of London (London School of Hygiene and Tropical Medicine); Fellow and Member of the Council of the Royal Statistical Society

Demy 8vo, 172 + VIII. Price **6/-** net

ANY assessment of success or failure in medicine which is based on fact rather than on opinion must nearly always be expressed in some numerical form—e.g., when the medical observer reports that he has treated so many cases with a favourable result in such and such a proportion, or the public health worker assesses the attack-rate on a population inoculated against some infection. We have reason to believe that there is now a steadily increasing demand among both clinical and public health workers for some knowledge of the elementary statistical technique, which will enable them to interpret figures or to analyse and test their meaning. Dr. Hill has succeeded in demonstrating clearly some of the ways in which investigations can be planned and figures derived from them can be analysed in order to yield fruitful results, choosing examples from medical publications to illustrate both the types of problems with which the medical worker is faced and the kinds of error he is most liable to make.

CONTENTS

CHAP		PAGE
I.	THE AIM OF THE STATISTICAL METHOD	1
II.	SELECTION	9
III.	PRESENTATION OF STATISTICS	19
IV.	THE VARIABILITY OF OBSERVATIONS	29
V.	CALCULATION OF THE STANDARD DEVIATION	38
VI.	PROBLEMS OF SAMPLING: AVERAGES	47
VII.	FURTHER PROBLEMS OF SAMPLING: PROPORTIONS	58
VIII.	FURTHER PROBLEMS OF SAMPLING: DIFFERENCES	68
IX.	FURTHER PROBLEMS OF SAMPLING: χ^2	78
X.	FURTHER EXAMPLES AND DISCUSSION OF χ^2	87
XI.	THE COEFFICIENT OF CORRELATION	97
XII.	CALCULATION OF THE CORRELATION COEFFICIENT	110
XIII.	LIFE TABLES AND SURVIVAL AFTER TREATMENT	117
XIV.	COMMON FALLACIES AND DIFFICULTIES	125
XV.	FURTHER FALLACIES AND DIFFICULTIES	135
XVI.	FURTHER FALLACIES AND DIFFICULTIES	144
XVII.	GENERAL SUMMARY AND CONCLUSIONS	153
	DEFINITIONS	165
	INDEX	169

OPINIONS

MEDICAL OFFICER: "That the book supplies a real need there can be no question; nor can there be any doubt that the right author was found for the job of providing it . . . this most valuable and helpful work."

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION: "The chapters . . . on common fallacies and difficulties should make invaluable reading for those who wish to avoid the worst pitfalls inherent in the statistical method."

PUBLIC HEALTH: ". . . the author has very skilfully gilded the statistical pill."

ST. THOMAS'S HOSPITAL GAZETTE: ". . . the simplest exposition of medical statistics yet available."

ORDER FORM

(This form may be handed to any bookseller.)

THE LANCET LTD.,
7 ADAM STREET, ADELPHI,
LONDON, W.C.2.

Please supply copy of Dr. Bradford Hill's book, "PRINCIPLES OF MEDICAL STATISTICS," for which I enclose remittance, 6/4, including postage.

Signed.....

.....

Date..... .....

PLEASE USE CAPITALS

Published by THE LANCET LTD., 7 Adam Street, Adelphi, London, W.C.2

ADDRESSES AND ORIGINAL ARTICLES

INJECTION TREATMENT OF INGUINAL HERNIA *

REPORT ON ONE HUNDRED CASES

By Arthur E. Porritt, M.Ch. Oxon., F.R.C.S. Eng.

ASSISTANT DIRECTOR TO THE SURGICAL UNIT, ST. MARY'S HOSPITAL, PADDINGTON

The rationale of the injection method of treating inguinal hernia is to fill up the inguinal canal with fibrous tissue, produced by the injection of a chemical irritant, to such an extent that, first, a hernial sac cannot get down the canal, or, secondly, contents cannot enter a pre-existing congenital sac.

HISTORY

The method is by no means new. Approximately 100 years ago it would seem to have had a considerable vogue in America and in France. Its originator was George Heaton of Boston, who published his results in 1843 and subsequently in book form (1870). Closely associated with him was Warren, also of Boston, and their methods were copied by Velpeau of Paris. Heaton himself used "quercus alba" as his chemical irritant; his American coworkers and Velpeau tried iodine, Lugol's solution, cantharides, and several mixtures of essential oils. They all adopted the procedure of one massive injection, the patient being—of necessity, one imagines!—confined to bed.

The advent of antiseptic and, later, aseptic surgery, and the publication between 1880 and 1890 by Halsted and Bassini of their operative methods for the treatment of hernia, led to the relegation of the injection idea. With the exception of the work of two men this state of affairs persisted until five or six years ago, since when, in America, a great deal of investigation has been carried out and innumerable papers published on the injection technique. The two who filled in the intervening period were Ignatz Mayer of Detroit (1930) and Pina Mestre of Barcelona, to whom must be given the credit for the present-day ambulant method of treatment. Mayer, working over a period of thirty years, and using a solution the essential constituents of which were zinc sulphate and carbolic acid, produced a series of 2000 cases in which he claimed 98 per cent. success. Pina Mestre, using a tannic acid solution, published in 1927 a series of 10,000 cases, showing almost equally good results, and no fatalities. Such figures prompted ardent research in America, with the result that there the method is to-day well approved and widely accepted. In this country, apart from the work of Delisle Gray (1934), it seems to have found very little recognition.

The series of 100 cases described here is the result of an attempt to evaluate the therapeutic and economic possibilities of the method. As the ultimate result of the treatment seemed the most important factor to be considered, they have been selected from about 150 cases as being those which it has been possible to follow up for periods varying from three years to six months. The remainder consists of those who have too recently come under treatment, those with whom it has been impossible to keep in touch, and those, only 8, who failed to complete their treatment. Before considering the selected 100 in detail certain general aspects require mention.

ANATOMY AND HISTOLOGY

Even at the risk of being obvious one cannot overemphasise the importance of a sound knowledge of the anatomy of the inguinal canal and its contents. Injections should be made deep to the aponeurosis of the external oblique and extend at approximately regular intervals from the crossing intercolumnar fibres of the external oblique at the external abdominal ring on the inner side to beyond the internal ring on the outer side, and from the conjoint tendon above to the inguinal ligament below.

Nelson and Rice (1937) have conducted an admirable series of experiments on both animals and men, which demonstrate the histological changes following injection. Their results may be briefly summarised as follows:—

6–15 hours: polymorph leucocytic response with occasional round cells and some œdema.
24 hours: signs of transient cellular necrosis.
5th day: evidence of fibroblasts.
8th day: many fibroblasts and new blood-vessels.
14th day: definite fibrous tissue formed.
42nd day: dense scar tissue.

In other words, the histological result is a "foreign body granuloma." The earlier stages of these changes I myself confirmed on guinea-pigs, late results being unavailable owing to overdosage adversely affecting the life of the animals concerned!

CHOICE OF CASE

This paper deals only with inguinal herniæ, although it includes recurrent herniæ that are really "incisional." But many workers have successfully used the method for femoral, umbilical, and ventral herniæ, and there seems no reason why the technique should not be judiciously extended to all types.

Sex is immaterial. Inguinal hernia is relatively much less common in women, but the method can be equally well applied in them, the anatomical differences making the technique slightly more difficult. Inability to invaginate the labium majus into the inguinal canal makes localisation of the needle point by touch impossible, but on the other hand the bogy of the spermatic cord is removed.

By experience one has found that the important factors in selecting cases are the size of the external abdominal ring and the amount of fat in the subcutaneous tissue of the groin. All herniæ of course must be completely reducible. The size of the actual hernia is of small import so long as it can be efficiently retained by a truss. But it has been found that in general with an external ring that admits two fingers treatment is likely to prove difficult or at least prolonged, and that the more fat there is overlying the inguinal canal the less likely are injections to be well placed. It seems probable that excessive subcutaneous fat, apart from increasing technical difficulties, implies, first, excessive extraperitoneal fat in which injections seem to cause more necrosis and less fibrosis, and, secondly, poor muscle power, with the consequent liability to further strain being thrown on an already weakened area.

Thus the young adult, with good musculature and minimum subcutaneous fat appears to be the ideal type for injection. One more requisite he should have—enough intelligence to coöperate in his treatment, particularly in the wearing and non-removal

* The substance of this paper was communicated in a post-graduate lecture at St. Mary's Hospital on Oct. 1st.

of his truss. For this reason alone children are in general not suitable cases.

The only other contra-indications worthy of mention are imperfectly descended testicle, the sliding type of hernia (if diagnosed), infective skin conditions of the groin, and hæmophilia. Such conditions as active venereal disease, ascites, or pregnancy, will obviously preclude the possibility of injections. But for chronic renal disease, diabetes, pulmonary tuberculosis, &c., which have in various papers been given as contra-indications, the method would seem to me to have a very definite field of utility. My series includes successful cases of all three conditions.

THE TRUSS

An essential adjunct, and to some extent a drawback, to the injection treatment is the wearing of a truss continuously during the course and for some time afterwards. The object of this support is to prevent any strain being thrown on the newly formed granulation tissue before it has had time to consolidate and become firm fibrous tissue. A well-fitting and comfortable truss is therefore of the utmost importance as it has to be lived in for some months, day and night—and in the bath! For this reason I have devised a truss, which has been made for me by Messrs. Weiss and Son, London, W.1, to cope with these requirements. It consists of a vulcanised hard rubber pad attached to a steel spring coated with the same material. This has the advantages of being cleanly, light, immersible in water and, after preliminary heating, capable of being moulded exactly to the contours of the individual patient. Small studs allow of rubber straps (abdominal and perineal) being fitted and used as required. In many cases they are not needed at all and patients' testimonies convince me that this type of truss is very satisfactory in all respects. Most patients in this series have done manual work—often very heavy—in them, and many have played games and even enjoyed the luxury of swimming while under treatment.

I always advise that the patient should wear the truss, and sleep in it, for a week or two before injections begin, so that he may be thoroughly used to it. Once treatment begins it must be removed only at the actual time of injection and then preferably by the surgeon.

SOLUTIONS

There appears to be as yet no unanimity of opinion upon the ideal solution to be used. This should be painless when injected, give no general systemic reaction, be non-toxic if injected intravenously or intraperitoneally, non-injurious to the tissues locally, and capable of producing the maximum fibroblastic reaction with the minimum of exudation. The solution used in this series—that of Mayer (zinc sulphate 1 dr., phenol crystals 6 dr., glycerin 4 dr., aqua cinnamoni 1 oz., sterilised redistilled water 2 oz.) admittedly does not fulfil all these requisites. It produces good and non-harmful local results and no general reaction, but often gives some pain and is toxic if injected intraperitoneally—and probably therefore intravenously. Now that this series is completed I intend to transfer my allegiance from a caustic adhesion-producing solution like the above to an astringent proliferation-producing solution of which the best to date appear to be Galtanol—a mixture of tannic and gallic acids, as used by Fowler (1935) in a series of 700 cases—Proliferol, or Sylnasol—a solution of sodium psylliate, used by Harris and White (1936) in a series of 100 cases, and by Biederman (1937). The original Pina Mestre solution with a tannic acid basis has been approved (1936) by the American Medical Association Council on Pharmacy and Chemistry, and used extensively by Jameson (1931). Winters (1936) has employed colloidal potassium guaiacol sulphonate, and McMillan and Cunningham (1936) a mixture of phenol, alcohol, and tincture of thuja. Even sodium morrhuate has its supporters.

TECHNIQUE

The patient lies upon a couch. In the average case there is no need to adopt a slight Trendelenburg position or to place a pelvic rest under the buttocks, although these manœuvres may be of assistance in dealing with the early stages of a big hernia or with an obese patient. The truss is then removed and the pubic hair cut with scissors. It is better not to shave as this often leads to dermatitis and discomfort under truss pressure. The spot chosen for injection is locally anæsthetised. At first this can be accurately determined by a finger invaginating the scrotum into the inguinal canal. Later surface landmarks or the results of previous injections must be the guides, and towards the end of treatment a small cough with the patient lying and a finger covering the inguinal canal will demonstrate residual weak spots.

The needles used are 22 or 23 gauge with a medium bevel. The needle is inserted vertically to the skin surface and will be found to meet two resistances—the skin and the aponeurosis of the external oblique. Just deep to this latter is the correct level for injection. Preliminary aspiration to exclude the needle being in a blood-vessel should always be done.

The dose will of course vary with the solution used. A preliminary 0·5 c.cm. followed subsequently by 1 c.cm. doses has been used with Mayer's solution. Injections can be given bi-weekly or even at shorter intervals according to the reactions of the individual patient. It is most important that they be given very slowly. The first drop will probably give an unpleasant stinging sensation, which however passes off in a few seconds—the remainder of the injection being practically painless. The patient should be made to describe the position of the initial sensation as this may help considerably in localisation. If pain in the testicle is complained of, the point of the needle is too close to the cord and must be moved accordingly. Vague pains moving across the pubis, towards the anterior superior spine, to the perineum or the thigh are of little significance. But any mention of abdominal pain is a danger signal implying that the sac or even the peritoneum proper have been penetrated. In this case the injection must be stopped immediately.

At a period varying from half an hour to three hours after the injection a feeling of vague discomfort develops in the groin of varying intensity, according to the type of patient and the stage of treatment. This discomfort is not sufficient to interrupt either the patient's work or his sleep, although it may last for as much as twelve hours.

Opinion varies about the end of the inguinal canal which should be injected first, the majority of workers starting at the outer limit or internal abdominal ring. I have favoured the external ring for the first injection, since localisation is then very exact, and further, any possible risk of incarceration is thereby avoided.

When treatment has reached the stage of there being no visible or palpable impulse on coughing with the patient recumbent, he is then given a fortnight's rest still wearing the truss. If on re-examination all is satisfactory, the truss is discarded at night. Two weeks later, all being well, gradual removal of the truss for an increasing number of hours daily is

allowed, this stage taking about a month varying with the occupation and intelligence of the patient. Thus it will be seen that some two months elapse from the time of the last injection to the time of complete discarding of the truss. Allowing for a preliminary wearing of the truss for a week or two before injections begin, and for an average of 10 to 12 injections at bi-weekly intervals, the whole treatment takes about four months—during which of course it must be remembered the patient is ambulant and able to live a normal life and carry on his usual occupation.

RESULTS

The 100 cases under consideration have all been injected during the last three years and have been followed up for a period of not less than six months.

Of the 100 patients 97 were male and 3 female. This does not give a true idea of the relative sex frequency, as the method was only extended to females this year. The average age of the patients was 38, the oldest being 66 and the youngest 17. Of the hundred, 64 were employed in manual labour, often of the hardest kind, and 36 in sedentary occupations.

The 100 patients were responsible for 110 herniæ. Of these 69 were right sided and 41 left, these figures including 10 bilateral cases. The herniæ were simple bubonoceles in 82 cases, and either scrotal or labial in 28. Five cases of recurrent herniæ after operation were dealt with. The average interval between the appearance of the hernia and the beginning of treatment was two years, the shortest period being one day and the longest eighteen years.

For these 110 herniæ, 1032 injections have been given, an average of approximately 9·4 per hernia. The average number of injections required to close the external abdominal ring was four.

Of these 1032 injections, three have been considered as intraperitoneal. The result was very alarming, the clinical condition being one of severe shock. This came on very rapidly—within a few moments, and passed off equally rapidly within half an hour. Treatment was complete rest, brandy by mouth, heat to the abdomen, and, in one case, an injection of adrenaline, in another of Coramine. All three cases left hospital within two hours of the injection and appeared none the worse afterwards.

Some 14 injections, apart from these three, produced severe reactions, either in the direction of immediate acute pain or of later prolonged swelling, tenderness, and discomfort. Occasionally, transient swellings in the upper part of the scrotum were noticed, particularly after early injections. These are typically painless. No case of testicular atrophy has been observed, and one patient with a bilateral hernia has since injection successfully sired a son.

Two cases are definitely failures, both these being elderly men of adipose build and having big scrotal herniæ coming through a very enlarged external ring. In both cases the hernia was reduced to the inguinal canal, but it proved impossible to hold them back in this region. There were 5 cases that came into another category—"recurrence." One feels that in these, recurrence simply expresses inadequate treatment, although 2 of the 5 came back over a year after apparent cure. All responded satisfactorily to further injections.

ECONOMIC ASPECT

It is chiefly the able-bodied young to middle-aged adult who becomes afflicted with hernia—i.e., the productive worker. If this class can in the main be saved from hospitalisation and loss of wages the economic advantages are self-evident. While admitting that generalities are misleading a minimal estimate of the position in this country produces interesting figures. On the basis of a weekly wage of £2 10*s.* and hospitalisation costs of £3 per week, the injection treatment effects at a conservative estimate a saving of £25 per patient either to the patient, the hospital, or the charitable aid societies. If 50 London hospitals operate on 100 cases each per year that might equally well be treated by injection, the loss in work, wages, and hospital costs amounts to £125,000, and if London accounts for 25 per cent. of the hernia cases treated annually in the country, the figures mount up to half a million sterling. Only a keen desire to avoid exaggeration leads one to quote nominal figures which probably but half represent the case. It seems that this aspect of the treatment alone would make it worthy of careful consideration by hospitals, charitable aid societies, insurance companies, public health bodies, the Services, and even perhaps the Ministry of Health itself.

Two other considerations are worthy of mention. A general acceptance of the treatment would free a large number of hospital beds annually for the reception of more acute or more worthy cases. On the analogy of American figures (Biederman 1937) it seems probable that there are some 2,000,000 hernia cases in this country going untreated because the people concerned either cannot afford operative cure or are frightened by the thought of operation. Such people represent a big entry on the debit side of the physical fitness ledger of the country.

CONCLUSIONS

Recurrences after operation, even in the hands of the best surgeons and when large series of cases are considered, give the unpleasantly high figure of about 10 per cent. Max Page (1934) in one series even found it as high as 25 per cent. Fallis (1936) in a series of 1600 cases arrived at a figure of 7·5 per cent. Injection offers a better prospect than this—7 per cent. in the present small series and figures as low as 2 per cent. to 3 per cent. in much larger series in America.

This result is achieved without any of the risks of anæsthesia or surgical interference. Complications are of a minor nature and relatively few in number; no mortality at present has been reported.

Both operation and injection aim at repairing the inguinal canal weakness by fibrous tissue formation. The former leads to a definite uncontrollable amount being produced which may or may not be sufficient to effect its purpose; the latter to a regulated and requisite amount, which even in the event of a "recurrence" can be increased or replaced by a few additional injections.

It is certainly not intended to imply that the injection treatment is the "cure-all" of hernia. It has obvious limitations, but within those limitations it would appear from the present series to be so free from risk, painless, economic, and efficacious as to merit an extended and prolonged trial.

REFERENCES

American Med. Ass.: Council on Pharmacy and Chemistry (1936) *J. Amer. med. Ass.* **107**, 1053.
Biederman, M. (1937) *Med. Rec.* **145**, 239.
Fallis, L. S. (1936) *Ann. Surg.* **104**, 403.
Fowler, S. W. (1935) *Med. Rec.* **141**, 207 and 387.
Gray, St. G. B. D. (1934) *Med. Pr.* **13**, 286.
Harris, F. I., and White A. S. (1936) *Surg. Gynec. Obstet.* **63**, 201.
Heaton, G. (1843) *Boston med. surg. J.* **26**, 421.
McMillan, W. M., and Cunningham, D. (1936) *J. Amer. med. Ass.* **106**, 1791.
Mayer, Ignatz (1930) *Med. Rec.* **131**, 90.
Nelson, C. O. (1937) Injection Treatment of Hernia, Philadelphia.
Page, M. (1934) *Brit. med. J.* **2**, 896.
Winters, R. A. (1936) *Med. Rec.* **144**, 114.

GOLD TREATMENT OF ARTHRITIS

A REVIEW OF 900 CASES

BY STANLEY J. HARTFALL, B.Sc., M.D. Leeds, M.R.C.P. Lond.

PROFESSOR OF THERAPEUTICS, UNIVERSITY OF LEEDS; HON. PHYSICIAN, LEEDS PUBLIC DISPENSARY AND HOSPITAL

HUGH G. GARLAND, M.D. Leeds, M.R.C.P. Lond.

DEMONSTRATOR IN TOXICOLOGY, UNIVERSITY OF LEEDS; HON. PHYSICIAN, LEEDS PUBLIC DISPENSARY AND HOSPITAL; AND

WILLIAM GOLDIE, M.B. Aberd., M.R.C.P. Edin.

RESEARCH FELLOW IN RHEUMATISM, UNIVERSITY OF LEEDS, AND LEEDS PUBLIC DISPENSARY AND HOSPITAL

(*Concluded from p. 788*)

Toxic Reactions

It is most important to realise the risks involved in chrysotherapy, and we feel justified in describing the toxic reactions we have met in some detail. We have included many minor disturbances, some so trivial that there is some question whether they may be toxic disturbances at all.

Throughout this section we have considered toxic reactions in relation to individual gold *courses* for the most part, and not in relation to *cases*. As will be seen later, there is no appreciable difference in the incidence, type, or severity of toxic reactions in the different disease groups which we have studied, and we have therefore dealt with them as a whole.

Our impressions concerning focal reactions mentioned in our previous papers (1935, 1936) remain the same—namely, that pain in the joints following injections, especially during the first course, is on the whole a favourable prognostic sign, and we propose to make no further observations in respect of this.

Cases.—Among the 900 cases of arthritis toxic reactions occurred in 377 (41·9 per cent.): this figure includes 59 single trivial and transient reactions, and the subtraction of these from the total would reduce the incidence of reactions from 377 to 318, or from 41·9 to 35·3 per cent. These figures include patients who have had both single and multiple reactions. The reactions were slight in 145, moderate in 178, and severe in 54. More prolonged observation of our patients has resulted in a slight increase in the total incidence of toxic phenomena, our previous figure being 37 per cent. (1936). Toxic reactions occurred in the first course in 310 of the 900 cases (34·4 per cent.); in 393 where a second course was given, toxic reactions occurred in 93 (23·7 per cent.); in 97 who had a third course there were 23 reactions (23·8 per cent.); in 24 who had a fourth course there were 6 (25 per cent.); and 1 case had five courses without toxic disturbances. It will be seen, therefore, that the frequency of reactions diminishes in the second and subsequent courses.

Courses.—In all, 1415 courses (including 60 incomplete courses) were given, of which 432 were associated with toxic disturbances (30·5 per cent.). Treatment was not usually withheld from patients who had toxic upsets in the first course, and 67 had no disturbance when a further course was given.

This supports the view we have previously expressed (1936), that the presence of the common toxic reactions is no contra-indication to further treatment at a later stage. Of 265 cases, however, who had no toxic disturbances in the first course, 65 (24·5 per cent.) had reactions in the second or later courses.

Tables XI and XII show the distribution of reactions in relation to sex and age. Statistical analysis shows the difference to be of no significance. The incidence of toxic reactions among the disease groups in terms of courses is shown in Table XIII; the differences are again not statistically significant. In Table XIV we have compared the toxic reactions among the different gold preparations, again in terms of courses.

TABLE XI

Toxic Reactions in Relation to Sex

—	Toxic reactions.	No toxic reactions.	Total.
Males	83 (36·7 %)	143	226
Females ..	294 (43·6 %)	380	674
Total ..	377 (41·9 %)	523	900

TABLE XII

Toxic Reactions in Relation to Age

Age-group.	Toxic reactions.	No toxic reactions.	Total.
0–39	72 (38·5 %)	115	187
40–59	223 (44·8 %)	275	498
60 + ...	82 (38·1 %)	133	215
Total ..	377 (41·9 %)	523	900

TABLE XIII

Toxic Reactions in Different Disease Groups

—	Cases.	Courses.	Reactions.	Percentage (of courses).
Rheumatoid arthritis ..	750	1218	375	30·8
Osteo-arthritis	68	88	28	31·8
Menopausal	23	29	9	31·1
Spondylitis ankylopoietica	18	30	8	26·7
Fibrositis	17	22	5	22·8
Gonococcal arthritis ..	6	9	2	22·2
Unclassified	18	19	5	26·4
Total	900	1415	432	

TABLE XIV

Toxic Reactions in Relation to Different Gold Salts

Preparation.	Courses.	Toxic reactions.			Per cent.			Total per cent.
		Slight.	Mod.	Severe.	Slight.	Mod.	Severe.	
Crisalbine ..	232	50	40	11	21·6	17·2	4·7	43·5
Lopion ..	815	85	97	36	10·4	11·9	4·4	26·7
Solganal ..	301	45	34	5	14·9	11·3	1·6	27·8
Myocrisin ..	67	12	13	4	17·9	19·4	6·0	43·3

Statistical analysis shows that on the numbers available there is no evidence of discrepancy in the incidence of *severe* toxic reactions among the four preparations; but if all types of reaction be considered, there is a significant difference—namely, that the incidence with crisalbine is higher than with other drugs. We have considered whether this was due to the larger doses of crisalbine used in our earlier cases, but a comparison of these cases actually shows a higher incidence of reactions with small dosage (crisalbine A) than with large dosage (crisalbine B). The fact that the interval between courses was shorter

in the earlier cases suggests that a toxic reaction occurring during a second course may actually have been a delayed reaction from the first course.

It is to be noted that the two intramuscular preparations contain the same amount of gold (50 per cent.) and that the two intravenous preparations contain approximately the same amount (crisalbine 37 per cent. and lopion 40 per cent.). The results shown in Table XIV suggest that the percentage of gold in any preparation is at least not the most important factor in determining toxicity, and that toxicity may be related more to chemical composition than to actual gold content.

TYPES OF TOXIC DISTURBANCE

The different types of toxic disturbance have been analysed in relation to the various preparations and also in terms of their severity (Table XV). They have

TABLE XV

—		Crisalbine.	Solganal.	Myocrisin.	Lopion.	Total.
Courses		232	301	67	915	1415
Total reactions		101 (43·5 %)	84 (27·8 %)	29 (43·3 %)	218 (26·7 %)	432 (30·5 %)
Skin—						
Pruritus		17	9	3	17	46
Pruritus and erythema	Sl.	24	24	6	43	97
	Mod.	7	8	2	30	47
	Sev.	1	—	—	3	4
Pruritus, erythema, and desquamation	Sl.	3	2	2	3	10
	Mod.	15	5	2	11	33
	Sev.	6	4	2	13	25
Mouth—						
Taste		5	2	—	4	11
Soreness	Sl.	11	4	2	18	35
	Mod.	3	3	2	7	15
	Sev.	1	—	—	—	1
Ulceration	Sl.	1	3	—	—	4
	Mod.	2	2	—	4	8
	Sev.	1	—	—	—	1
Alimentary tract—						
Colic		1	—	—	—	1
Nausea		1	1	1	3	6
Diarrhœa	Sl.	7	4	1	4	16
	Mod.	6	3	—	6	15
Vomiting	Sl.	—	—	—	5	5
	Mod.	—	2	1	3	6
Jaundice	Sl.	2	3	3	14	22
	Mod.	5	9	4	32	50
	Sev.	2	1	1	9	13
Blood—						
Purpura		3	2	1	3	9
Agranulocytosis		1	—	—	—	1
Hypochromic anæmia		—	1	—	—	1
Macrocytic "		2	—	—	—	2
Renal—						
Albuminuria	Sl.	—	1	—	3	4
	Mod.	2	—	—	5	7
	Sev.	1	—	—	1	2
Hæmaturia		1	—	1	—	2
Nervous—						
Peripheral neuritis		—	—	2	2	4
Crural "		—	—	—	1	1
Miscellaneous—						
Orchitis		1	—	—	—	1
Hæmoptysis		—	—	—	1	1
Cough		2	2	—	3	7

Sl., mod., sev. = slight, moderate, severe.

been classified as skin, mouth, alimentary tract, blood, renal, neurological, and miscellaneous reactions. Jaundice, because of its high incidence and special interest, has been shown separately.

There are two striking features disclosed in Table XV. The first is the high proportion of cases showing *skin disturbances*.

Including 46 cases of pruritus only, there are 262 such skin reactions; 28 of them were severe, including 5 cases of exfoliative dermatitis. In general, however, the skin reactions were not serious; they mostly developed during the course of treatment (although not after any particular injection) but in a few cases they were delayed, appearing from one to twenty-four weeks after the last injection; actually, we found among these 262 cases that 220 developed during the course, 22 from one to three weeks after, 12 from three to six weeks after, 4 from six to nine weeks after, 3 from nine to twelve weeks after, and 1 more than twelve weeks after the last injection. The duration of the rash was commonly three weeks, but in 32 it lasted three to six weeks, in 38 six to twelve weeks, and in 25 more than twelve weeks; in 4 cases some evidence of rash was found to be present one year after the last injection. The duration of the exfoliative dermatitis varied from twelve to twenty-four weeks; in 1 case it was complicated by a broncho-pneumonia which proved fatal.

A number of other cutaneous disturbances were seen, with or without pruritus, erythema, or desquamation.

Noteworthy among these were 2 cases of lichen planus and 6 of herpes zoster, of which 2 involved the distribution of the fifth nerve. Other reactions included 2 cases of hyperkeratosis and 1 of dyskeratosis, 2 of severe intertrigo, and single examples of pustular dermatitis, generalised urticaria, pityriasis rosea, and actinic rash. Some of these skin disorders are probably without significance other than as possible examples of "biotropism" or of the "pattern reaction." There were in addition several ocular manifestations: 4 cases of conjunctivitis were seen, 3 of iritis, and 1 of corneal ulcer; the examples of conjunctivitis were always associated with some generalised cutaneous manifestation; it is less certain that the iritis and corneal ulcer were similarly related.

Mouth disturbances were seen in 75 cases. The great majority (72) of these mouth reactions occurred during the treatment, and we saw only three examples of delayed mouth reactions.

Alimentary tract disturbances, that in our opinion were chrysogenic effects, were seen in 50 cases. The colic and nausea in each case occurred during the course, closely associated with the time of the injection; they did not continue after the end of the course. In general we have had no severe alimentary tract disturbances.

Jaundice.—In the report of our first 100 cases (1935) there were no examples of toxic jaundice. In the second paper (1936) there were 11 examples among 300 cases (3·7 per cent.); in the present report of 900 patients there were 85 cases (9·4 per cent.). This is of interest since attempts are being made to induce jaundice as a therapeutic measure in rheumatoid arthritis (Hench 1935). In view of the importance of this complication and the fact that no other workers in this country have encountered or commented upon it, we propose to consider these cases in greater detail. At the outset it should be stated that the conclusions are complicated by the fact that a sparse outbreak of infective hepatic jaundice has been present sporadically during the last eighteen months in the area from which the large majority of our cases have come. During this period of four years in the Arthritis Clinic itself there were 3 cases of jaundice, indistinguishable from chrysogenic toxic jaundice, among patients who had never had gold treatment. It is quite clear, however, that the proportion of cases of toxic jaundice among patients on gold treatment is much greater than could be accounted for by chance infection.

From Table XV it will be seen that the jaundice was slight in 22 cases, moderate in 50, and severe in 13; in 2 of the latter there was a fatal issue. Of the 85 cases there were 67 females and 18 males (9·8 per cent. and 7·9 per cent. respectively). No age-group was disproportionately affected. Jaundice occurred in 9 cases treated

with crisalbine (3·8 per cent. of total courses of that drug), in 13 (4·3 per cent.) with solganal, in 8 (11·9 per cent.) with myocrisin, and in 55 (6·8 per cent.) with lopion. We had 69 examples of jaundice after the first course, 14 after the second, and 2 after the third. It never occurred a second time. In 9 cases it developed during the course, in 25 up to three weeks, in 17 from four to six weeks, in 28 from seven to twelve weeks, and in 6 cases from twelve to twenty weeks after the last injection. In only 6 cases did the jaundice persist for longer than six weeks.

In the great majority the clinical picture was indistinguishable from "catarrhal jaundice"; it was usually preceded by two or three days' anorexia, and sometimes nausea and vomiting, and within a further few days the icterus was clearly visible in the conjunctivæ, and later in the skin. The urine was dark and the stools pale for a few days. The liver was found to be enlarged and tender, the van den Bergh test gave biphasic reactions and, in the more severe cases, a transient positive direct reaction. The relation of the jaundice to the ultimate results will be discussed later.

Presumably the cause of the jaundice is the temporary toxic effect of the gold salts upon the liver cells, inducing a hepatitis which in some cases may progress to the more serious, permanent, and irreversible hepatic changes of subacute necrosis. Gold is therefore brought into line with phosphorus and arsenic in producing similar toxic effects upon the liver. Whether gold salts have been entirely responsible for the whole of this we are not prepared to say, but it is evidently not the rule for a progressive lesion of the liver to be set up in cases which develop toxic jaundice. This view is supported by the fact that jaundice has not occurred a second time among cases where a second course of treatment has been cautiously given. It is difficult to explain why there should be this sudden increase in the incidence of jaundice among our patients, and we are unable to account for it. We have searched especially for any peculiarity as regards geographical distribution, concentration of cases in a particular locality, and seasonal incidence, but have found nothing which is at all suggestive.

Blood disturbances.—We have previously reported (1935) the details of 1 case of agranulocytosis, in the production of which it is possible that gold salts played a part, and in the same paper we mentioned 2 cases of purpura. Two more cases of purpura were mentioned in the second paper (1936). We have now records of 5 additional non-fatal cases of purpura which developed during gold treatment. The lowest number of platelets per c.mm. observed in 7 of these cases were 25,000, 35,000, 50,000, 151,000 (cases which recovered), and 38,000, 90,000, and 285,000 (fatal cases). Three of the patients who recovered were given large quantities of ascorbic acid, but in the earlier cases this preparation was not available. Observation by the capillary resistance test on these patients, as well as on toxic cases not showing clinical purpura, suggests that there is an element of capillary damage—a peripheral toxic effect—and in 10 out of 14 non-purpuric toxic cases purpura has been induced by this test. It is therefore probable that two factors are involved; in some of the cases of frank purpura, idiosyncrasy to the gold salt may occur and is manifested by a toxic effect on the hæmopoietic tissues of the bone-marrow and a consequent decrease in circulating platelets; whereas in both these and other cases of purpura, and in some non-purpuric cases, there is a peripheral effect on capillary endothelium which can be demonstrated by a positive capillary resistance test. This point is being further investigated. One case developed moderate hypochromic anæmia of fairly sudden onset, the hæmoglobin falling to 64 per cent., and 2 others have developed a macrocytic anæmia while under gold treatment. We have examined blood films in 50 cases, including 16 toxic cases, for the presence of punctate basophilia, as described by Griffiths and Race (1935), and in only 1 case has this phenomenon been observed. It is to be noted, however, that whereas the great majority of the cases observed by Griffiths and Race were treated with sanocrysin, none of the above 50 cases has been given that preparation.

Other disturbances.—Albuminuria is still surprisingly infrequent, and although many thousands of specimens of urine were examined albuminuria has been found in only 13 cases; in only 2 of these was it at all severe and persistent. The two examples of hæmaturia were not associated with purpura, but one had in addition erythema, pruritus and desquamation, metallic taste in the mouth, diarrhœa, and prolonged albuminuria. The case of orchitis occurred in association with other disturbances (jaundice and pruritus), and seemed to be a true chrysogenic effect. The incidence of cough is probably higher than the 7 cases shown in the table; we have mentioned the difficulty of assessing the incidence of cough among a number of out-patients, and in compiling this record we have excluded all those cases of cough not fulfilling the characteristics we have previously described (1936). Hæmoptysis lasting for two days occurred in one case.

Neurological complications.—Our experience has been that of others (Lescher 1936) in that nervous complications are perhaps the rarest seen in gold therapy. With the exception of some of the cases of cerebral hæmorrhage in which the ætiology is uncertain, we have seen no examples of central nervous disturbance.

There have, however, been 4 examples of polyneuritis, and owing to the unusual clinical picture these cases will be described in detail at a future date. Briefly, during a course of gold treatment, the patients have all complained of severe pain in the feet with the rapid development of unsteadiness, difficulty in walking, "pins and needles," and numbness. All 4 cases have shown an almost complete paralysis of the feet, complete loss of postural sense in the toes, and gross impairment of pain sensation over the feet and lower legs; the ankle-jerks have been absent and the knee-jerks present. With the exception of a little subjective disturbance in the hands there has been no involvement of the upper limbs. All these cases have arisen in the last few months and are at present showing no sign of improvement. Laboratory investigations have shown nothing of note with the exception of a strongly positive Lange curve in the cerebro-spinal fluid of one patient.

PREVENTION OF TOXIC REACTIONS

In an attempt to prevent toxic disturbances we have given calcium salts, injected with the intravenous crisalbine as 10 per cent. calcium gluconate solution, in 42 courses among 36 patients: we have already recorded the effects in the majority of these (1936), but our final observations show that the incidence of toxic reactions was 18 (50 per cent.). There were 15 skin reactions, including 3 with soreness of the mouth; 2 of the skin reactions were severe, and 1 was accompanied by purpura and dysphagia; there were 2 alimentary tract disturbances and 2 cases of jaundice of moderate severity. These later observations confirm our previous view (1936) that calcium salts do not influence the incidence of toxic disturbances, and we have now abandoned their use.

We have used ascorbic acid to test its effect in preventing toxic disturbances.

We injected 25 mg. of this substance with each dose of gold salt, in 152 courses among 150 cases. The results are shown in Table XVI.

TABLE XVI

Toxic Reactions with Ascorbic Acid

—	Courses.	Skin.	Mouth.	Alimentary tract.	Jaundice.	Others.	Total reactions.
Lopion ..	124	26	4	4	9	4	47 (37·9 %)
Myocrisin ..	25	9	3	—	2	1	15 (60 %)
Solganal ..	2	—	—	—	1	—	1 (50 %)
Crisalbine ..	1	—	—	—	—	—	—
Total ..	152	35	7	4	12	5	63 (41·4 %)

It will be seen that reactions occurred in 41·4 per cent. of courses. Multiple reactions occurred six times where ascorbic acid was used with lopion, and three times where it was used with myocrisin. It is to be observed that no blood disturbances occurred among any of these cases, but the non-appearance of blood reactions in 150 cases has no statistical significance. In the prevention of the common toxic reactions, including jaundice, ascorbic acid seems, therefore, to have no effect.

TREATMENT OF TOXIC REACTIONS

We still feel that there is no specific treatment for any of the toxic reactions of gold, and that the various reactions can only be treated symptomatically. The milder forms of pruritus and erythema recover in a few days or weeks, and are usually relieved with calamine lotion containing up to 2 per cent. of carbolic acid, together with a small dose of sedative such as bromide or Luminal. The more severe skin eruptions demand hospital treatment. Our usual practice is to admit all cases of jaundice to hospital, where they are given large doses of glucose, alkalis, and calcium. Stomatitis is relieved to some extent by acriflavine, which is given in the form of six to eight 3 mg. tablets daily; this was suggested to us by Dr. Forestier. Diarrhœa and colic have been so transient in our experience that they do not require treatment. Purpuric manifestations have been treated with large doses of ascorbic acid, which can be given by mouth. Albuminuria may be prolonged, but as it has not been accompanied by any symptoms we have not attempted any forms of treatment other than suspending chrysotherapy.

RESULTS OF TREATMENT IN TOXIC AND NON-TOXIC CASES

A comparison has been made, in cases of rheumatoid arthritis only, of the results of treatment in cases which have had toxic reactions and in those having none. Statistical analysis shows that the differences are of no significance; it is, therefore, not necessary to produce toxic reactions to obtain good results, nor does the presence of toxic reactions preclude a result which is ultimately satisfactory. This is the essence of what we formerly claimed (1935, 1936), and we cannot associate ourselves with the inferential statement put forward by Copeman and Tegner (1937) that "such general reactions far from being harmful are almost essential to success."

There is, however, a significant difference in the results in cases that have had toxic jaundice as compared with cases having had no jaundice, as shown in Table XVII.

The differences are statistically significant; the most important part of the discrepancy is shown to be in the "no improvement and worse" class. In this connexion it is of interest that 5 cases developing jaundice after 1–4 gold injections showed no clinical improvement. These cases are not included in the above table as they had not completed one full course. Our figures show, therefore, that the results in cases having toxic jaundice are worse than in those having no jaundice, and our experience does not support the claims of Hench (1935) that jaundice is a valuable therapeutic measure in rheumatoid arthritis.

TABLE XVII

Results of Treatment in Relation to Jaundice

Result.	Jaundice.	No jaundice.	Total.
Cured	11 (7·50)	57 (60·50)	68
Marked imp. ..	37 (43·23)	355 (348·76)	392
Moderate imp. ..	7 (9·93)	83 (80·07)	90
Slight imp.	3 (4·74)	40 (38·26)	43
No imp. and worse ..	16 (8·60)	62 (69·40)	78
Total ..	74	597	671

The numbers in parentheses are the expected numbers—i.e., the numbers which should occur in each group if jaundice were in no way related to the result.

During our four years' experience 20 cases have died from the following causes:

	Cases.		Cases.
Cerebral hæmorrhage or thrombosis	5	Purpura	3
Coronary thrombosis ..	2	Agranulocytosis ..	1
Cardiac failure	2	Exfoliative dermatitis ..	1
Diabetes, with abscess of buttock	1	Cause unknown ..	3
Subacute liver necrosis ..	2	Total	20

In 17 the cause is known, and in 10 of these death was due to natural causes such as might be expected among a group of patients in the later decades of life (cerebral and coronary vascular accidents, heart failure, and diabetes). In 7 (0·78 per cent.), however, we are satisfied that gold was the principal agent—namely, 3 cases of purpura (2 crisalbine, 1 myocrisin), 1 of agranulocytosis (crisalbine), 2 of subacute necrosis of the liver (1 lopion, 1 myocrisin), and 1 of exfoliative dermatitis (lopion). Thus as the relationship between gold treatment and death is unknown in 3 cases, the possible association in our cases is a maximum of 1·1 per cent. (10 cases), with a certain minimum of 0·78 per cent. (7 cases). The percentage of deaths due to gold was 3·1 in the first 100 cases (1935) and 1·3 in the first 400 (1936).

Discussion

The ætiology of rheumatoid arthritis is still obscure and our own experience has added little or nothing to this subject. The clinical features suggest that it is of infective origin, and it was owing to the many aspects that this disease has in common with tuberculosis that gold treatment was first introduced some eight years ago. Since that time gold has been used extensively both in this country and on the Continent, and the majority of workers have reported results similar to our own. Although a great deal of work on the pharmacology of gold has been done its exact mode of action in rheumatoid arthritis remains uncertain, and we feel that little is to be gained at the present time by speculation. In our previous papers (1935, 1936) we gave a brief review of the literature, and although several series of cases showing results of gold treatment have been published since that time (Bach 1936, Crosby 1936, Copeman and Tegner 1937) nothing has been added to our knowledge of the mechanism of gold therapy.

We hold the view that gold is the best single form of treatment in rheumatoid arthritis. Unfortunately we are still unable to predict toxic reactions, although we are at present investigating a patch test which appears to be giving promising results. The factors on which toxic reactions depend are still unknown, but from our own experience we feel justified in drawing the following tentative conclusions. Certain individuals undoubtedly show an idiosyncrasy to gold, developing multiple reactions after very small doses, and these cases are presumably unsuitable for treatment. In others there are no doubt several factors; dosage is of some importance although less than we have previously thought; statistical analysis suggests that dosage up to 2 g. is at least not more toxic than dosage of half that figure. Our clinical impression is, however, that the maximum single dose should not be more than 0·1 g. and that a course of injections should not consist of more than 1 g. At the same time our earlier experience suggests that larger doses produce even more striking results. It is probable that some preparations of gold are more toxic than others, but their toxicity does not appear to be dependent on the route of injection. Age and sex, severity and duration of the disease appear to have no bearing on the frequency of reactions, nor have we found any relationship between the blood sedimentation-rate and the development of toxic reactions.

There are a few real contra-indications to gold treatment; any history of previous purpura or agranulocytosis appears to be an absolute contra-indication, as is gross renal or hepatic disease. We firmly believe that rheumatoid arthritis, if seen in its early stages, can be cured by gold, and there are few, if any, cases of the disease that cannot be improved to some extent. An early diagnosis is admittedly often difficult, especially when there is a monarticular onset, and we wish to emphasise the importance of regarding all acute non-traumatic monarticular arthritis as the possible beginning of widespread and severe rheumatoid arthritis.

We still think that every patient should have at least two courses of injections, and agree with Forestier that a persistently raised blood sedimentation-rate is an indication for further gold treatment. Although chrysotherapy has been our only form of treatment, we agree with other workers that there is a number of cases where this form of therapy should be combined with other measures, particularly of an orthopædic nature.

Summary and Conclusions

1. Gold treatment has been used for four years in 900 cases of arthritis; 750 were examples of rheumatoid arthritis.

2. Apparent cure or striking improvement* occurred in 80 per cent. of the cases of rheumatoid arthritis.

3. Relapse may occur, especially after the first course, but if treatment be continued a second relapse is rare.

4. All patients should have at least two full courses of treatment.

5. Toxic reactions occurred in 40 per cent. of cases, but as a rule did not contra-indicate further treatment.

6. Gold treatment is of doubtful value in other forms of arthritis.

We wish to express our gratitude to the Board of the Leeds Public Dispensary and Hospital for their encouragement and support in this work; to Dr. J. A. Fraser Roberts for his valuable criticism and the statistical analysis of some of the tables presented in this paper; to Messrs. Bayer Products Ltd., Messrs. Schering, and Messrs. Pharmaceutical Specialities (May and Baker) Ltd., who have supplied us with lopion, solganal, and myocrisin respectively; and to Messrs. Bayer Products Ltd. and Messrs. Hoffmann-La Roche Ltd. who have provided ascorbic acid.

REFERENCES

Bach, F. (1936) *St Bart's Hosp. Rep.* **43**, 206.
B.M.A. Committee Report (1933) *Brit. med. J.* **1**, 1033.
Copeman, W. S. C., and Tegner, W. (1937) *Lancet*, **1**, 554.
Crosby, G. J. V. (1936) *Ibid*, **1**, 1463.
Dawson, M. H., and Tyson, T. L. (1936) *J. Lab. clin. Med* **21**, 575.
Forestier, J. (1934) *Lancet*, **2**, 646.
Griffiths, G. J., and Race, J. (1935) *Ibid*, **2**, 714.
Hartfall, S. J., and Garland, H. G. (1935) *Ibid*, p. 8.
— — (1936) *Ibid*, **1**, 1459.
— — (1936) *Univ. Leeds med. Soc. Mag.* **6**, 18.
Hench, P. S. (1935) *Med. Clin. N. Amer.* **19**, 551.
Lescher, F. G. (1936) *Brit. med. J.* **2**, 1303.

* We have been asked to give our criteria in judging the different grades of improvement described in the first part of the article (pp. 786, 787)—"moderate improvement," "chronic" or "slight improvement," &c. Unfortunately these cannot be strictly compared with the grades of *disability* (p. 785), since in classifying the final improvement of our cases, not only is the mechanical disability and the improvement in pain and stiffness taken into account, but also the general health of the patient and the result of the sedimentation test.

ABSORPTION AND EXCRETION OF ŒSTRONE BY THE HUMAN ORGANISM

BY TAGE KEMP, M.D. Copenhagen
AND
KAJ PEDERSEN-BJERGAARD
(*From the University Institute of General Pathology, Copenhagen*)

THE wide use of œstrogenic hormones in therapy necessitates investigation into the conditions of their absorption and excretion and into their behaviour in the body. Œstrogenic hormones are rapidly absorbed from the digestive tract; they are not destroyed by the digestive secretions and we have shown (1932) that when œstrone is administered by mouth only a very small portion can be recovered from the fæces. When œstrone is ingested into the human organism it displays its own specific action. Once it has entered the blood stream it rapidly disappears, part of it being decomposed in the circulating blood (Fee, Marrian, and Parkes 1929) and in the liver (Zondek 1934), and part being excreted, particularly in the urine. On the other hand a deposit—e.g., of œstrone benzoate in oily solution or œstrone in solid form—may remain in the tissues for a long time. It exudes slowly into the blood stream and so has a very protracted action.

As is well known, considerable quantities of œstrogenic substances are found in human urine of pregnancy; mature women who are not pregnant excrete between 25 and 200 mouse units a day, whilst demonstrable quantities are often found in the urine of castrated or old women, of young girls, and of men, though generally less than 10 M.U. a day, and this preponderantly of endogenous origin.

A certain comparatively small quantity of the œstrone that is administered to the organism extraneously can be found again in the urine, as we have previously shown and has since been confirmed —e.g., Zondek 1934, Mazer and Israel 1937. This is true of animals—e.g., dogs and rabbits—as well as of human beings.

INVESTIGATION

We began by studying the excretion in men, and we found that after a single dose of œstrone 3–6 per cent. of the hormone given is found again in the urine. This has been confirmed by a number of tests, of which one is illustrated in Fig. 1. It should be noted that the excretion was far greater during the first 24 hours and ceased entirely within 48 hours of administration. Furthermore, it is remarkable that the excretion was greater after oral than after parenteral administration. (All the determinations of œstrin in the urine were made by titration on mice, in most cases after extraction by the method described by us in 1933.) We have also made many variations in our investigations into the excretion after longer periods of administration, both oral and intramuscular.

CASE 1.—Man aged 45, weighing 83 kg.; transvestite but normal physically. After examination for three weeks without administration of œstrin it was found that less than 20 M.U. œstrin was excreted a day, the amount usually not being demonstrable at all. The excretions of male hormone and gonadotropic hormone were also those of normal man. The following experiments were carried out on this patient:—

(*a*) 2000 M.U. of œstrin* was given intramuscularly once a day 12 times in the course of 15 days (altogether 24,000 M.U.). During the same period 1805 M.U. was found in the urine. Thus 7·5 per cent. of the œstrin administered intramuscularly was excreted in the urine (Fig. 2A).

(*b*) 2000 M.U. was given by mouth once a day for 8 days and 2000 orally 3 times a day for 10 days (altogether 76,000 M.U.). During the same period 7886 M.U. was found in the urine (Fig. 2B). Thus 10·4 per cent. of the œstrin administered orally was excreted in the urine.

(*c*) 2000 M.U. œstrone benzoate was given intramuscularly once a day for 10 days (altogether 20,000 M.U.). During the same period 1070 M.U. was excreted (Fig. 2C). Thus 5·4 per cent. of the œstrone benzoate administered intramuscularly was excreted in the urine.

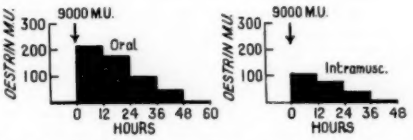


FIG. 1.—Excretion of œstrin after a single dose of œstrone: oral and intramuscular methods contrasted. (M.U. = mouse units.)

(*d*) 10,000 M.U. of œstrin was given intramuscularly 6 times, and then 100,000 M.U. of œstrin 3 times, in the course of 12 days (altogether 360,000 M.U.). During the same period 4350 M.U. was found in the urine (Fig. 2D). Thus 1·2 per cent. of the œstrin administered intramuscularly was excreted in the urine.

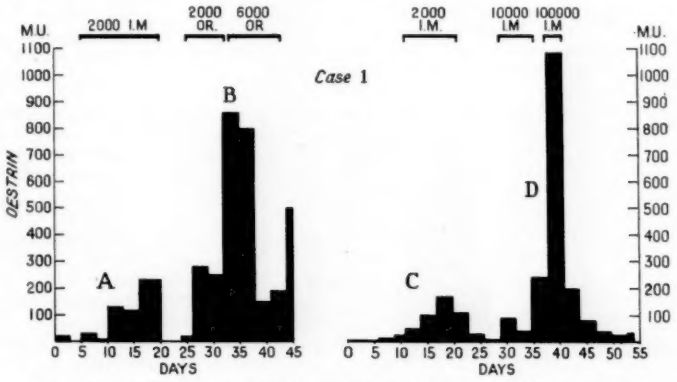
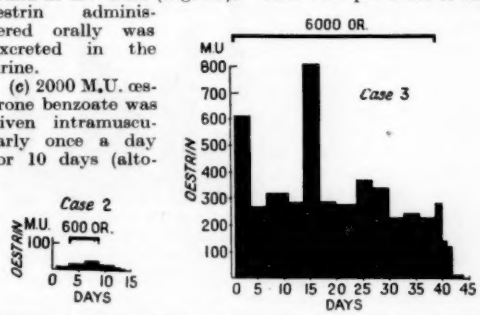


FIG. 2.—Comparison of oral and intramuscular injections: male transvestite.



FIGS. 3 and 4.—Effect of different dosage: castrated women. Œstrin excreted = about 5 per cent. of dose.

The investigation into Case 1, like the investigation previously mentioned, shows that there is a somewhat greater excretion after oral than after intramuscular administration. It also shows that the percentage excreted is lower after the administration of very large doses, intramuscularly, than of medium and small doses, when an excretion of about 5–10 per cent. of the quantity administered is found. Similar results are obtained in castrated women, as the following four cases show.

CASE 2.—Woman aged 38, weighing 46·2 kg. Castrate. Double salpingo-oöphorectomy with supravaginal hysterectomy 7 years ago. Less than 8 M.U. of œstrin a day was found in the urine. 200 M.U. of œstrin was given by mouth 3 times a day for 6 days (altogether 3600 M.U.), and during this period 162 M.U. was found in the urine (Fig. 3). Thus 4·5 per cent. of the œstrin administered was excreted in the urine.

CASE 3.—Woman 38 years old, weighing 66·9 kg. Radium-castrate. Cancer of cervix 5 years ago; radium treatment followed by menopause. Admitted to hospital now for depressio mentis. 2000 M.U. of œstrin was given by mouth 3 times a day, the total being 228,000 M.U. in 38 days (plus the same dose for 5 days before the analyses began). During the same period 13,200 M.U. was found in the urine (Fig. 4). Thus 5·8 per cent. of the œstrin administered by mouth was excreted in the urine.

In these two cases it can be seen that about 5 per cent. of the œstrin administered orally was excreted in the urine, and that the quantity excreted was almost proportional to the dose given.

CASE 4.—Woman aged 46, weighing 85·7 kg. Castrate. Double oöphorectomy 18 years ago. Very fat since then. Admitted to hospital for depressio mentis. Less than 15 M.U. œstrin a day in urine. 300 M.U. of œstrin was given by mouth 3 times a day for 18 days (total 16,200 M.U.), and during the same period 1724 M.U. was found

* The œstrin used in all the experiments was in the form of Ovex Leo, in tablets or in ampoules; 1 mouse unit of this preparation for oral use corresponds in biological action to 2 international units of œstrone. When it is given intramuscularly 1 M.U. corresponds to about 5 I.U. The doses given can thus be reckoned in international units by multiplying by 2 and 5 respectively. But the mouse units of the preparation given correspond to those of the urine, as they are determined by the same method and on the same experimental animals.

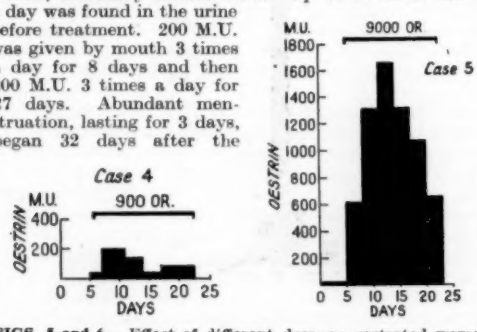
in the urine (Fig. 5). Thus 10·6 per cent. of the œstrin administered orally was excreted in the urine.

CASE 5.—Woman aged 38, weighing 60 kg. Castrate. Double salpingo-oöphorectomy and hysterectomy 15 years ago. Admitted to hospital for depressio mentis. Urine contained less than 8 M.U. œstrin a day. 3000 M.U. was given by mouth 3 times a day for 18 days (total 162,000 M.U.). During the same period 20,010 M.U. was found in the urine (Fig. 6). Thus 12·4 per cent. of the œstrin administered orally was excreted in the urine.

In these two cases it can be seen that about 10 per cent. of the œstrin administered by mouth was excreted in the urine, and that the quantity excreted was almost proportional to the size of the dose given.

Finally, the following two cases are quoted as a couple of examples drawn from a large group of patients who had undergone hormone analyses and who were suffering from various gynæcological diseases.

CASE 6.—Woman aged 38, married. Weight, 67·3 kg. Menses regularly until 3 months before admission to hospital, since when menostasia. Diagnosis: depressio mentis, secondary amenorrhœa. Up to 20 M.U. œstrin a day was found in the urine before treatment. 200 M.U. was given by mouth 3 times a day for 8 days and then 300 M.U. 3 times a day for 27 days. Abundant menstruation, lasting for 3 days, began 32 days after the treatment started. This recurred a month later, following a normal course. The urine was tested for its content of œstrin for 30 days, during which period altogether 26,100 M.U. was given orally, and 2220 M.U. was found in it (Fig. 7). Thus 8·5 per cent. of the œstrin administered was excreted in the urine.



FIGS. 5 and 6.—Effect of different dosage: castrated women. Œstrin excreted = about 10 per cent. of dose.

CASE 7.—Woman aged 38, weighing 88·9 kg. Diagnosis: depressio mentis, hypomenorrhœa, climacterium incipiens. Menstruation, interrupted by two normal births, always regular until 1½ years ago, since when it has been very irregular. Six months ago amenorrhœa for 3 months, since when menstruation has been very slight, occurring once a month but only as a single spot on the diaper. There have also been pronounced climacteric troubles during the last nine months. Examination of the basal metabolism and rectovaginal exploration showed that conditions were normal. Before treatment less than 11 M.U. œstrin a day was found on testing the urine for hormones in the middle of the interval. Ovex tablets were given, 200 M.U. 3 times a day for 30 days, and then 300 M.U. 3 times a day for 14 days. Abundant menstruation, lasting for 5 days, occurred 16 days after the cure began. There was also plentiful menstruation, lasting for 4 days, 1 month later, whilst at the same time the menopausal troubles ceased. Altogether 60,000 M.U. of œstrin was given by mouth in 44 days, during which period 1880 M.U. was found in the urine (Fig. 8). Thus 3·1 per cent. of the œstrin administered was excreted in the urine.

Here, too, a quantity corresponding to 3 per cent. and 10 per cent. of the œstrin administered is found in the urine. But the fact cannot be ignored, as it could in the cases of castrates and men, that in this case part of the hormone excreted came from the woman's own ovaries.

The foregoing are also typical of a number of cases with menopausal symptoms, oligomenorrhœa or hypomenorrhœa, and also secondary amenorrhœa of short duration. In these patients the content of œstrin in the urine was extraordinarily low before treatment began, the amount rising to normal or even higher values during the hormone treatment, whilst at the same time the symptoms of the patients' diseases disappeared. The patients could in some cases be considered cured, in so far as the symptoms were not present when the hormone treatment ceased, but in other cases treatment had to be resumed.

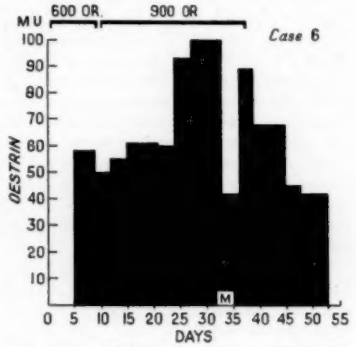


FIG. 7.—Effect of dosage: secondary amenorrhœa.

The quantity of œstrin excreted in the urine of normal mature women fluctuates cyclically but as a rule about 100 M.U., and never more than 200 M.U., is excreted a day. The foregoing curves show that such an excretion can be attained by the daily administration of about 1000–2000 M.U. of œstrone (see Figs. 2 and 5) by mouth, or about 2000 M.U. intramuscularly (Fig. 3).

Now no definite conclusion as to its therapeutic action can, of course, be drawn from the excretion of œstrone in urine. Among other things, it would appear that the proportion excreted is greater after oral than after intramuscular administration, whilst clinicians know that a greater therapeutic effect is obtained by administering the same dose parenterally than by giving it by mouth. Clinical experiments (Kaufmann and many others) have shown that larger doses than those mentioned must be used to effect substitution where œstrone production by the ovaries has ceased. Œstrone administered artificially has thus less biological action on the human organism than the hormone formed by the ovaries.

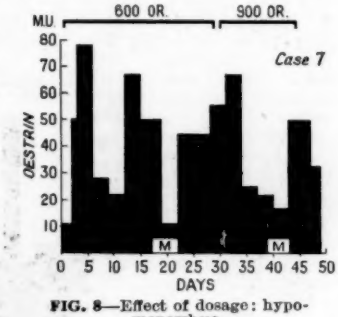


FIG. 8—Effect of dosage: hypomenorrhœa.

The explanation of this extraordinary fact can only be that the hormone that is administered orally is rapidly absorbed and is found for a short time in a fairly highly concentrated form in the blood. On the other hand, if it is given parenterally, usually in oily solution, it will pass slowly into the blood from the deposit injected and a "Hormonü-

berrieselung" (continuous flooding with hormone) will result, more nearly corresponding to the way in which the ovary normally supplies the organism with œstrone.

Nevertheless, since oral administration has many practical advantages it will often be preferred. The hormone must, then, be given divided into as many doses as possible during the course of the day, and, so far as possible, in a form that will be absorbed slowly, so that it is supplied to the organism fairly uniformly throughout the day.

SUMMARY

If œstrin is administered to men or to castrate women 3–12 per cent. of it is excreted in the urine shortly after administration.

The proportion excreted is somewhat greater after oral than after parenteral administration. When œstrin is given by mouth the quantity excreted is proportional to the dose administered.

Œstrin, administered orally, is very rapidly absorbed and excreted by the body and has therefore a comparatively low specific biological action. It ought therefore to be administered, so far as possible, in such form that it can be absorbed slowly, and to be given divided into three or more daily doses.

REFERENCES

Fee, A. R., Marrian, G. F., and Parkes, A. S. (1929) *J. Physiol.* **67**, 377.
Kemp, T., and Pedersen-Bjergaard, K. (1933) *Endokrinologie*, **13**, 156.
Mazer, Ch., and Israel, S. L. (1937) *J. Amer. med. Ass.* **108**, 163.
Robson, J. M., MacGregor, T. N., Illingworth, R. E., and Steere, N. (1934) *Brit. med. J.*, **1**, 888.
Zondek, B. (1934) *Skand. Arch. Physiol.*, **70**, 133.

TRANSFORMATION OF MALE SEX HORMONES INTO A SUBSTANCE WITH THE ACTION OF A FEMALE HORMONE

BY E. STEINACH
AND
H. KUN

(*From the Physiological Department, Biological Research Institute of the Vienna Academy of Science*)

PREVIOUSLY we have demonstrated that administration of male hormone (urine and androsterone) to male rats (both normal and castrate) increases the excretion of œstrogenic substances in their urine (Steinach, Kun, and Peczenik 1936). From this we concluded that the male organism can convert male hormone into a substance with a female hormone effect. These important findings in animal experiments led us to inquire whether such a transformation also takes place in the human subject after administration of large quantities of male hormone. For this purpose we injected large quantities of male hormone into patients who had previously been thoroughly examined and determined the excretion of œstrogenic substance in the morning urine.

Six men of varying ages were treated. In five cases we used testosterone propionate in single doses of 50 mg. and in one case androsterone benzoate in single doses of 20 mg. Testosterone propionate was given three times weekly, androsterone benzoate four times weekly. In all, twenty injections were given. Five patients, therefore, each received a total of 1000 mg. testosterone propionate and one patient 400 mg. of androsterone benzoate.

The morning urine is concentrated in vacuo to one-fifth its volume, and the resultant extracted with benzol. This benzol extract was distilled and the residue suspended in 4 c.cm. sesame oil. Standardisation was done on female castrated rats, the extract being injected in four equal doses on two consecutive days at 9 A.M. and 6 P.M.

Before treatment the morning urine of each patient was examined in order to determine the normal excretion of œstrogenic substance. Usually the quantity varies between 0 and 36 R.U. (rat units) per litre; only in one case was a greater quantity (133 R.U.) found. During the treatment, after every three injections (corresponding to an interval of a week) further estimations were carried out. After the first three injections of testosterone propionate an increase in the excretion of œstrogenic substance was perceptible (between 67 and 110 R.U. per litre of morning urine). In the one case where 133 R.U. was found before injection, the amount rose to 416 R.U. after the first three injections. After three injections of androsterone benzoate the increase of hormone secretion was likewise evident, although more moderate (from nil before treatment to 15 R.U. after). With continued treatment, the excretion of œstrogenic substance progressively increased and it reached its highest point after 18–20 injections—i.e., towards the end of the course. The largest quantity that we have yet been able to observe was 1200 R.U. with testosterone propionate and 210 R.U. with androsterone benzoate per litre morning urine. After cessation of the injections a sharp decline followed and after two or three weeks the normal threshold was again reached.

The nature of this modified substance demonstrable in the urine remains doubtful. For the present one can only review the apparent possibilities—namely, (1) follicular hormone (œstrone, œstradiol); (2) substances from the group of male sex hormones with œstrogenic effect, androstenediol (Butenandt 1936); and (3) dihydro-androsterone (Dannenbaum 1936).

Regarding Group 1 (follicular hormone) reference must be made here to the work of Steinach, Kun, and Peczenik on the circulation of the brain. They have demonstrated that only the female sex hormone and not the male sex hormone (androsterone, androstenediol, testosterone) causes a well-developed hyperæmia. The physiological testicular hormone contains this hyperæmic factor which is demonstrated by transplantations, vasoligature, and the researches of Steinach on the anterior pituitary. The artificial male hormone, when injected, must therefore first be transformed in the body into this physiological substance. Under such conditions the possibility arises of intensifying male sex hormone therapy by the addition of a small dose of female hormone. We have used this combined treatment and already reported on the general and, in particular, the psychical effect. In a further communication the importance of the combined injection of male and female hormone in the treatment of high blood pressure and hypertension will be demonstrated.

We are indebted to Prof. Schoeller of the Schering laboratories for supplies of highly concentrated male hormone.

REFERENCES

Butenandt, A. (1936) *Naturwissenschaften*, **24**, 15.
Dannenbaum (1936) *Ergebn. Physiol.* **38**, 796.
Steinach, E. (1910) *Zbl. Physiol.* **24**, No. 13.
— (1912) *Pflüg. Arch. ges. Physiol.* **144**, 71.
— (1915–20) *Arch. EntwMech. Org.*
— (1936) *Wien. klin. Wschr.* **49**, 161 and 196.
— and Kun, H. (1928) *Med. Klin.* **24**, 524.
— — and Peczenik, O. (1936) *Wien. klin. Wschr.* **49**, 899 and 903.

A MACROSCOPIC AGGLUTINATION TEST FOR DIAGNOSIS OF WEIL'S DISEASE

By J. Smith, D.Sc., M.D. Aberd.
M.R.C.P. Lond., D.P.H.
CITY BACTERIOLOGIST, CITY HOSPITAL, ABERDEEN; AND
W. J. Tulloch, O.B.E., M.D. St. And.
PROFESSOR OF BACTERIOLOGY, UNIVERSITY OF ST. ANDREWS, MEDICAL SCHOOL, DUNDEE

THE full development of the study of the epidemiology of Weil's disease has been handicapped, to some extent, by difficulties that have occurred in the laboratory diagnosis. During the acute phase (1st–4th day) of the illness, leptospira can be obtained from the blood by cultural and animal inoculation methods. Throughout the period from the 5th to the 7th day after the onset, it is usually impossible to obtain the leptospira from the blood, and immune bodies cannot be demonstrated in the serum. From the 8th day onwards lysins, agglutinins, and complement-fixing bodies appear in increasing amounts in the blood, while from the 13th to the 21st day leptospira may, in some cases, be excreted in the urine, from which they can be best recovered by animal inoculation methods. At this period also, doubtless owing to the invariable presence of an albuminuria, agglutinins and lysins can be shown to be present in this excretion, though their concentration is very much less than occurs in the serum.

The simplest method of confirming the clinical diagnosis would be by a macroscopic agglutination test, but up to the present the methods employed in culturing the leptospira and in carrying out the serological tests have had a somewhat complicated technique, with the result that they are not widely practised.

Three types of serological reactions have been used for diagnosis—complement-fixation, adhesion, and agglutination and lysis.

The *complement-fixation* test was employed by Costa and Troisier (1916),[1] who believed that it was non-specific in that serum from cases of syphilis gave positive fixation with a leptospiral antigen. Bessemans and Nélis (1928), however, found the test to be specific, and used it to confirm the diagnosis in four cases of spirochætal jaundice. This test has also been used more recently by Gaehtgens (1933) and by Pot and Dornickx (1935). The latter workers claimed that the reaction has certain advantages over agglutination and lysis tests, because it could be carried out by anyone familiar with the Wassermann reaction, that the antigen employed by them was a safe fluid material, and that the weakly positive results of the agglutination and lysis tests were avoided.

Adhesion test.—A number of workers (Laveran and Mesnil 1901, Brussin 1925, Kritschewski and Tscherikower 1926) have demonstrated the fact that particles such as blood platelets or bacteria become adherent to trypanosomes or spirochætes in the presence of immune serum. Brown and Davis (1927) applied this phenomenon as a means of differentiating serological types of leptospira, and proposed the name of the adhesion test. Brown (1935) showed further that the test could be used for the serological diagnosis of cases of Weil's disease.

The *agglutination and lysis* test devised by Schüffner and Mochtar (1927) marked a great advance. This method has been found to be entirely reliable in the serological diagnosis of infections due to various types of pathogenic leptospira. The technique of the test, however, is rather elaborate and requires the use of dark-ground illumination methods. Again Erber (1935) described the agglutination method employed at the Pasteur Institute. Various dilutions of the serum are prepared, and 0·1 c.cm. of each dilution is mixed with 0·9 c.cm. of a culture of leptospira grown in rabbit serum and saline. As growth in this medium apparently does not produce sufficient turbidity, the results of the tests after an incubation period of one hour at 37° C. are determined by removing portions of the mixture and observing the reaction by dark-ground illumination methods. Finally Pot (1936) described a macroscopic agglutination test in which the leptospira from 250 c.cm. of Korthof's (1932) liquid medium were centrifuged, and the deposit resuspended in 10 c.cm. of meat medium (*p*H 7·6) to which 0·2 c.cm. of commercial formalin was added. Sera from 26 patients positive to Schüffner's test were examined, and the macroscopic agglutination test was positive in twenty-five cases. One serum, however, gave a positive Schüffner test at a dilution of 1/1000, a positive complement-fixation test at 1/320, but a negative macroscopic agglutination test. A series of twenty-five control sera submitted for Wassermann reaction gave negative tests by all methods. The author emphasises the fact that the difficulties associated with the growing of large quantities of leptospira should not be underestimated.

PRELIMINARY OBSERVATIONS

If it were possible to elaborate an easily conducted, and easily interpreted, macroscopic test, the serological diagnosis of leptospirosis by laboratory procedures would present but little difficulty. Admittedly such a test might not be of great value in the investigation of more serious cases exhibiting the characteristic clinical features of the malady. It would, on the other hand, be useful when examining less severe cases in which, because of the lack of definite clinical manifestations, diagnosis is delayed and it would constitute the method of choice for establishing a diagnosis in retrospect.

In view of the experience of one of us (W. J. T.) when investigating the agglutination reactions of separated bacterial flagella, it seemed very probable that, although cultures of leptospira do not show much turbidity before exposure to antibodies, they could, on such exposure under suitable conditions, produce floccules that would be easily seen. It is possible to prepare a suspension of bacterial flagella which is virtually transparent although it contains enormous numbers of these structures. When such transparent flagellar suspensions are exposed to their appropriate (antiflagellar) serum, floccules are formed which can be seen by the naked eye, if indirect illumination is employed.

As the leptospira resemble, in certain respects, flagellar material it was decided in the first instance to investigate the behaviour of these micro-organisms when exposed to certain conditions, which are known markedly to affect the morphology and serological characters of bacterial flagella.

CULTURAL METHODS

The culture medium used for growing the leptospira is that devised by the Dutch workers, and is prepared as follows:

To 1500 c.cm. of tap water 1·5 grammes of Witte's peptone is added; boil; add 300 c.cm. of Ringer's solution and 150 c.cm. of Sorensen's double phosphate buffer mixture *p*H 7·2; boil and then place in refrigerator to cool; filter and check *p*H; place 3 c.cm. in clean, new test-tubes and sterilise in autoclave for 20 minutes; when cool add 0·3 c.cm. of fresh, sterile rabbit serum to each tube and heat at 56° C. for 30 minutes; incubate at 37° C. overnight to test for sterility. The tubes are then heavily inoculated by a pipette from leptospiral cultures, and incubated at 30° C. for from 4 to 10 days.

INFLUENCE OF HEAT

Young cultures in Schüffner medium were heated in a water bath at 55° C. for 30 minutes, observations being taken at 5, 10, 20, and 30 minutes. The results obtained were as follows.

Controls.—The organisms in this remained motile, being evenly distributed, and their morphology was characteristic.

Five minutes at 55° C.—The organisms were no longer motile although evenly distributed and still typical in form.

Ten minutes at 55° C.—The leptospiræ were now curled upon themselves, exhibited a degree of fragmentation, and showed a tendency to aggregate.

Twenty minutes at 55° C.—Similar to the findings at 10 minutes but fragmentation was now quite definite.

Thirty minutes at 55° C.—It was difficult to see leptospiræ at all as they were apparently entirely fragmented.

These observations strongly suggest that if a heated suspension of the organism were to be employed as antigen, any serological test conducted therewith would have to be of the nature of a precipitation, rather than an agglutination. In the former the antigen may be kept constant in quantity throughout a series of tests, the antibody being varied, while in the latter the antibody content is constant in quantity and the antigen varied.

For the time being it was decided to attempt to elaborate an agglutination rather than a precipitation test, in order that correlation might be made between any macroscopic procedure evolved and the Schüffner method using dark-field illumination.

EXPOSURE TO FORMALIN

As bacterial flagella are well preserved by exposure to formalin, cultures of leptospiræ were treated with that reagent, Table I giving the results obtained.

TABLE I

Effect of heat and of formalinisation on agglutinability of leptospira

(*a*) Serum: artificially prepared antileptospira serum of rabbit origin.
(*b*) Incubation: 3 hrs. at 37° C. followed by 30 mm. at 55° C. when readings were taken; then the tubes were stood at room temperature overnight, and a second reading made.

Cultures tested.	Effect of sera in tests: final dilutions.							
	Antiserum (rabbit).					Normal rabbit serum.		
	1/20	1/80	1/320	1/1280	1/5120	1/20	1/80	1/320
Live—								
Exam. at 3 hrs. 30 min.	++	+	+	–	–	–	–	–
Overnight at room T.	++	++	+	+	(+)	–	–	–
Heated 55° C. 30 min.—								
Exam. at 3 hrs. 30 min.	+	–	–	–	–	–	–	–
Overnight at room T.	g.	g.	g.	g.	g.	g.	g.	g.
Formalin 0·5 per cent.—								
Exam. at 3 hrs. 30 min.	Fg.	Fg.	Fg.	g.	g.	g.	g.	g.
Overnight at room T.	Fg.	Fg.	Fg.	g.	g.	g.	g.	g.
Formalin 0·1 per cent.—								
Exam. at 3 hrs. 30 min.	Fg.	Fg.	g.	g.	g.	g.	g.	g.
Overnight at room T.	Fg.	Fg.	g.	g.	g.	g.	g.	g.
Formalinisation minimal—								
Exam. at 3 hrs. 30 min.	g.	g.	g.	g.	g.	g.	g.	g.
Overnight at room T.	g.	g.	g.	g.	g.	g.	g.	g.

++=pronounced flocculation. +=slight flocculation. (+)=doubtful flocculation. g.=granular deposit. Fg.=granular deposit plus definite flocculation. T.=temperature.

Exposure to 0·5 per cent. formalin.—This gave quite a stable suspension but dark-ground examination thereof revealed marked distortion of the organisms. Moreover masses of material appeared in cultures so treated. The presence of these amorphous aggregates indicated that 0·5 per cent. formalin as a preservative would not be satisfactory, because whatever their nature, they would render difficult interpretation of agglutination tests.

Exposure to 0·1 per cent. formalin.—This gave much the same result as attempted preservation with 0·5 per cent. of the same reagent.

It seems, therefore, that if formalin 0·5 per cent. or 0·1 per cent. is added to cultures in Schüffner medium, precipitation of the proteins of the medium occurs. Therefore, lower concentrations of this preservative would have to be used, and it seemed doubtful whether it would be possible to obtain a concentration possessing adequate preserving qualities which was at the same time devoid of precipitating action.

Minimal quantities of formalin.—Culture tubes of leptospiræ were plugged with absorbent cotton-wool on which had been placed one drop of ordinary commercial formalin. The tube with the formalinised plug was then covered with a rubber cap so that only formalin vapour was permitted to act slowly upon the culture. Observing cultures dealt with in this way the following was noted:

(*a*) Examined the day after insertion of the formalinised plug the suspension was found to be evenly distributed and the background perfectly clear.

(*b*) Examined a week later the suspension was still evenly distributed but the numbers of micro-organisms appeared to be reduced.

(*c*) Examined a month later dark-ground illumination failed to show the presence of recognisable leptospiræ.

If then suspensions preserved with formalin were to be essayed, it would be necessary to follow the procedure of Pot (1936), but this presents certain technical difficulties, and it was decided, therefore, temporarily to abandon the attempt to prepare formalinised suspensions. A number of tests in which cultures preserved by the above method were exposed to the serum of a rabbit immunised against leptospira icterohæmorrhagiæ were, however, performed.

TABLE II

Effect of heat and merthiolate, alone and combined, on agglutinability

(*a*) Serum: artificially prepared antileptospira serum of rabbit origin.
(*b*) Incubation: 3 hrs. at 37° C. followed by 30 min. at 55° C.

Cultures tested and treatment before test.	Effect on sera in tests: final dilutions.						
	Antiserum (rabbit).				Normal rabbit serum.		
	1/100	1/200	1/400	1/800	1/100	1/200	1/400
Live culture ..	+++	+++	+++	+	–	–	–
Merthiolate 1/20,000	+	(+)	?	–	–	–	–
Heated 55° C. for 5 min., no merthiolate	–	–	–	–	–	–	–
Heated 55° C. for 5 min., merthiolate 1/20,000 ..	–	–	–	–	–	–	–

ATTEMPTED PRESERVATION WITH MERTHIOLATE

It seemed possible that although formalin was unsatisfactory as a preservative for suspensions of leptospiræ, such preservation might be achieved by the use of merthiolate. The following experiment was conducted:

Cultures were heated to 55° C. for 5 minutes, the object being to eliminate, if possible, any autolytic qualities that might be possessed by the micro-organisms. Thereafter

1/20,000 merthiolate was added to preserve the suspensions so prepared; tests carried out with reagents made in this way gave the results which are shown in Table II.

From this it is seen that heating to 55° C., even for 5 minutes, renders cultures of leptospiræ in Schüffner's medium unsuitable as an antigen for conducting agglutination tests. The addition of merthiolate also renders suspensions of unheated leptospiræ less flocculable than live cultures. It may be concluded that the most delicate and satisfactory antigen to use for agglutination is a live culture of the micro-organism.

OPTIMUM CONDITIONS FOR MACROSCOPIC TEST

In view of what is known concerning the mechanism of agglutination, it seemed highly probable that once the leptospiræ were sensitised by their appropriate antibody they would not exhibit the same tendency to fragmentation on exposure to heat as they do in the unsensitised state. If this were so, incubation at a temperature between 30° and 37° C.—sensitising incubation—could be followed by a short exposure to 55° C.—flocculating incubation—in order that the rapidity of the reaction might be increased. Actually this proved to be the case, as is shown in Table III.

TABLE III

Effect of incubation

(*a*) Serum: artificially prepared antileptospira serum of rabbit origin.
(*b*) Antigen: young live cultures of leptospiræ.

Time and temp. of incubation before observation.	Effect on sera in tests (final dilutions).						
	Antiserum (rabbit).				Normal rabbit serum.		
	1/100	1/200	1/400	1/800	1/100	1/200	1/400
3 hrs. at 37° C. + 30 min. at 55° C.	+++	+++	+++	+	–	–	–
3 hrs. at 37° C. + 30 min. at room T.	+	(+)	?	–	–	–	–
3 hrs. at 37° C. + overnight at 55° C.	+++	+++	+++	+	–	–	–
3 hrs. at 37° C. + overnight at room T.	++	+	+	(+)	–	–	–

On completing these preliminary observations comparative tests were made of the Schüffner procedure (Davidson and others 1934) and the macroscopic agglutination method. In the case of the macroscopic test special care was observed to ensure that the antigen was in its most sensitive state, that the volume of serum under test was small in relation to the volume of culture tested, and that incubation was carried out under optimum conditions.

Antigen.—For this, young actively growing cultures of leptospiræ were used.

Volume of serum dilutions in tests.—In distributing sera the volume was as small as was compatible with accurate dilution.

Volume of culture in test.—The volume of culture added was equal to 6 times the volume of each dilution of serum tested. This ensured that the culture was not unduly diluted in the final mixtures of serum and culture.

Incubation.—The mixtures of serum and culture were incubated for three hours at 37° C., followed by 30 minutes at 55° C., thereafter the results were read using oblique illumination and a hand lens.

The floccules which form are quite easily observed, and no difficulty was experienced in interpreting the results.

FIRST SERIES OF RESULTS

In the first series of tests, samples of sera were tested by the Schüffner technique (see Davidson and others 1934, for a description of the method) by one worker, and then sent to the other to apply the macroscopic method. This necessitated the use of different suspensions of leptospira. In this manner 27 sera and 2 urines were tested, and the results are presented in Table IV.

TABLE IV

First comparative series of microscopic and macroscopic agglutination tests

Spec. No.	Specimen.	Source.	Titre— Microscopic.	Titre— Macroscopic.
1	Serum	Healthy fishworker.	Neg.	Neg.
2	,,		1/100	1/400
3	,,		1/300	1/400
4	,,		1/100	1/400
5	,,		1/300	1/1600 +
6	Urine.	Case of Weil's disease.	1/30	1/16
7	Serum.		1/300	1/800–1/1600
8	,,		1/100	1/400–1/800
9	,,		1/300	1/1600 +
10	,,	Catarrhal jaundice.	Neg.	—
11	,,	Healthy fishworker.	1/300	1/800
12	,,		1/30	1/400
13	,,		1/30	1/800
14	,,		1/300	1/400
15	,,		1/30	1/800–1/1600
16	,,		1/100	1/200–1/400
17	,,		1/10	1/100
18	,,		1/30	1/100–1/200
19	,,		1/300	1/800
20	,,		1/100	1/800
21	,,		1/300	1/1600 +
22	,,		1/100	1/800
23	,,		1/100	1/400
24	,,		1/100	1/50–1/100
25	,,		1/300	1/1600 +
26	,,		1/1000	1/1600 +
27	,,		1/100	1/100–1/200
28	,,		1/30	1/100
29	Urine.	Case of Weil's disease.	1/100	1/16–1/32

Results from 21 specimens of sera, obtained from healthy fishworkers who had at some previous time been exposed to infection with leptospira (Smith and Davidson 1936) and 4 sera and 2 urines, from recent cases of Weil's disease, show that when it was simply a question of a positive or negative finding, the two tests were in entire agreement. On the other hand, under the conditions described above, higher titres were, on the whole, obtained by the macroscopic than by the microscopic method.

SECOND SERIES OF RESULTS

In the first series of tests, normal saline had been used for the diluent in the macroscopic method, and

Schüffner medium without rabbit serum for the microscopic tests. Furthermore, the suspensions of leptospira had not been prepared from the same cultures. In order to get a closer comparison of the microscopic and macroscopic agglutination tests, a further series of experiments were then carried out.

In this second series, the diluent employed was the Schüffner medium without rabbit serum, and the *same* cultures were used for both tests on each specimen of serum. Furthermore, the dilutions of the serum were made to correspond entirely in the two series of tests as, in place of one drop, 0·1 c.cm. was substituted as the unit volume, and both tests were set up from the same initial dilutions, thus :—

Tubes containing preliminary dilutions of the serum—

	No. 1	No. 2	No. 3	No. 4
Diluent	1·2 c.cm.	0·9 c.cm.	0·9 c.cm.	0·9 c.cm.
Serum	0·3 „	0·1 „ of No. 1	0·1 „ of No. 2	0·1 „ of No. 3
Dilution	1/5	1/50	1/500	1/5000

By employing for the Schüffner method eight tubes (2 by ¼ in. size) in which two drops of diluent are placed in every alternate one, and by placing three drops and one drop from each serum dilution in each pair of tubes respectively, a series of serum dilutions ranging from 1/5 to 1/15,000 are obtained, and when three drops of leptospiral emulsion are added, the dilutions of the serum range from 1/10 to 1/30,000. In the macroscopic tests, using eight Dreyer agglutination tubes, the unit volume was 0·1 c.cm., so that when the serum dilutions and leptospiral emulsions had been distributed, the total volume was 0·6 c.cm., as compared with six drops for the microscopic method.

TABLE V

Examination of positive specimens from human cases of Weil's disease

Case No.	Day of illness.	Specimen.	Sero-reaction. Schüffner.	Sero-reaction. Macroscopic.
58	6	Serum.	1/100	1/100
58	16	Serum.	1/3000	1/10,000
59	6	Serum.	1/300	1/300
59	13	Serum.	1/30,000	1/30,000
60	10	Serum.	1/300	1/300
60	16	Serum.	1/1000	1/1000
61	11	Serum.	1/30,000	1/30,000
58	15	Urine.	1/2	1/2
58	19	Urine.	1/10	1/30
58	27	Urine.	1/100	1/100
60	17	Urine.	1/10	1/30
61	11	Urine.	1/100	1/100
58	6	Cerebro-spinal fluid.	1/2	1/2
61	11	Cerebro-spinal fluid.	1/300	1/300

Human specimens.—Specimens were obtained in the first instance from cases of Weil's disease at various times during the course of the illness, and the results are given in Table V. From this it is seen that there is a very high degree of correspondence between the two tests with serum, urine, and, in two instances, with cerebro-spinal fluid. The agglutinin titres of the sera ranged from 1/100 to 1/30,000, the urine titres from 1/2 to 1/100, and the cerebro-spinal fluid titres from 1/2 to 1/300. To control these results, 10 specimens of sera submitted for the Wassermann test and 10 of urine sent for routine examination were similarly tested, with entirely negative results. Again, in Table VI the results of further tests on sera obtained from fishworkers whose clinical histories in some instances indicated that they probably had an attack of Weil's disease in the past, or had contracted a latent infection, are given. The results obtained were to all intents and purposes identical. In some instances, the end titres differed to the extent of one dilution. In this Table also, the negative findings in tests made with 7 specimens of serum obtained from children suffering from epidemic catarrhal jaundice are also given.

TABLE VI

Comparison of microscopic and macroscopic agglutination tests with various sera

Serum No.	Source and previous history.	Sex.	Titre. Schüffner.	Titre. Macroscopic.
40	Fish-worker. Influenza.	M.	1/300	1/1000
41	Fish-worker. „	F.	1/300	1/300
42	Fish-worker. Jaundice, 1935.	F.	1/30	1/30
43	Fish-worker. Healthy.	F.	1/10	1/10
44	Fish-worker. Jaundice, 1934.	F.	1/30	1/30
46	Fish-worker. Healthy.	F.	1/10	1/10
48	Fish-worker. „	F.	1/10	1/30
1A to 7A	Child with epidemic jaundice.	..	Neg. 1/10	Neg. 1/10

Animal specimens.—In order that the applicability of the macroscopic test might be examined more fully, a series of 10 guinea-pigs were vaccinated at weekly intervals with two doses of 1 c.cm. of a culture of non-virulent *Leptospira icterohæmorrhagiæ*. Two weeks after the second injection the animals were killed, and the serum obtained from each guinea-pig was tested for antibodies by the macroscopic and microscopic methods. Here again the results (Table VII) were similar, the titres ranging from 1/10 to 1/100, with an occasional discrepancy of only one dilution between the two tests. In this Table also the findings in a series of eleven positive sera from wild rats are detailed, and the results are equally satisfactory. In a further series of nine rats, the sera gave negative results in both tests in the lowest dilution used, namely 1/10.

TABLE VII

Examination of positive specimens from animal sources

No.	(a) Animal. (b) Specimen. (c) Type of treatment.	Sero-reaction. Schüffner	Sero-reaction. Macroscopic.	No.	(a) Animal. (b) Specimen. (c) Type of treatment.	Sero-reaction. Schüffner	Sero-reaction. Macroscopic.
1	(a) Guinea-pig. (b) Serum. (c) Two injections of leptospiral vaccine.	1/30	1/100	11	(a) Wild rat. (b) Serum. (c) None.	1/100	1/100
2	(a) Guinea-pig. (b) Serum. (c) Two injections of leptospiral vaccine.	1/30	1/100	12	(a) Wild rat. (b) Serum. (c) None.	1/100	1/30
3	(a) Guinea-pig. (b) Serum. (c) Two injections of leptospiral vaccine.	1/10	1/30	13	(a) Wild rat. (b) Serum. (c) None.	1/30	1/30
4	(a) Guinea-pig. (b) Serum. (c) Two injections of leptospiral vaccine.	1/100	1/100	14	(a) Wild rat. (b) Serum. (c) None.	1/30	1/30
5	(a) Guinea-pig. (b) Serum. (c) Two injections of leptospiral vaccine.	1/100	1/100	15	(a) Wild rat. (b) Serum. (c) None.	1/10	1/30
6	(a) Guinea-pig. (b) Serum. (c) Two injections of leptospiral vaccine.	1/10	1/10	16	(a) Wild rat. (b) Serum. (c) None.	1/100	1/100
7	(a) Guinea-pig. (b) Serum. (c) Two injections of leptospiral vaccine.	1/100	1/100	17	(a) Wild rat. (b) Serum. (c) None.	1/10	1/10
8	(a) Guinea-pig. (b) Serum. (c) Two injections of leptospiral vaccine.	1/30	1/100	18	(a) Wild rat. (b) Serum. (c) None.	1/30	1/100
9	(a) Guinea-pig. (b) Serum. (c) Two injections of leptospiral vaccine.	1/10	1/30	19	(a) Wild rat. (b) Serum. (c) None.	1/100	1/100
10	(a) Guinea-pig. (b) Serum. (c) Two injections of leptospiral vaccine.	1/100	1/100	20	(a) Wild rat. (b) Serum. (c) None.	1/1000	1/1000
				21	(a) Wild rat. (b) Serum. (c) None.	1/30	1/30

COMMENT

It was found on making comparative experiments with the Schüffner dark-ground procedure and the method outlined that the results for both were remark-

ably alike. It is well known that with the Schüffner technique agglutination of the living leptospiral emulsion occurs in the lower dilutions of the serum, and lysis in the higher dilutions. This lytic action is not complete, and apparently in no way interferes with the interpretation of the macroscopic test. The end titre of an immune serum is somewhat difficult to determine without considerable practice when the dark-ground method is employed, but no particular dubiety occurs in connexion with the interpretation of the macroscopic method.

The ease with which macroscopic tests can be carried out, and interpreted, demands special emphasis since this makes possible a much wider application of serological methods to the study of leptospirosis, both in man and in rodents. Such a test applied to the study of rodents is less costly than inoculation, the results are available in a few hours, and large numbers of specimens can be examined without undue expenditure of time or labour. Moreover it is possible, in view of Schüffner's findings in Holland, that leptospirosis may account for an appreciable number of cases of "pyrexia of unknown origin" occurring in this country. Notwithstanding the fact that the reaction described is much less laborious than the original dark-field procedure, it is felt by the authors that the possibility of elaborating a similar precipitation test deserves consideration. Could this be done, preserved antigen might be employed and the convenience of the method greatly enhanced.

REFERENCES

Bessemans, A., and Nélis, P. (1928) *C.R. Soc. Biol. Paris*, **98**, 1234.
Brown, H. C. (1935) *Brit. med. J.* **1**, 411.
— and Davis, L. J. (1927) *Brit. J. exp. Path.* **8**, 397.
Brussin, A. M. (1925) *Z. ImmunForsch.* **54**, 328.
Costa, S., and Troisier, J. (1916) *C.R. Soc. Biol. Paris*, **89**, 1038.
Davidson, L. S. P., Campbell, R. M., Rae, H. J., and Smith, J. (1934) *Brit. med. J.* **2**, 1137.
Erber, B. (1935) *C.R. Soc. Biol. Paris*, **120**, 618.
Gaehtgens, W. (1933) *Z. ImmunForsch.* **79**, 1.
Korthof, G. (1932) *Zbl. Bakt.* **125**, 429.
Kritschewski, J. L., and Tscherikower, R. S. (1926) *Z. ImmunForsch.* **45**, 530.
Laveran, A., and Mesnil, F. (1901) *Ann. Inst. Pasteur*, **15**, 673.
Pot, A. W., and Dornickx, C. G. J. (1935) *Ned. Tijdschr. Geneesk.* **5**, 79.
Pot, A. W. (1936) *Lancet*, **1**, 1290.
Schüffner, W. A. P., and Mochtar, A. (1927) *Zbl. Bakt.* (Abt. 1), **101**, 405.
Smith, J., and Davidson, L. S. P. (1936) *J. Hyg.* **36**, 438.

CONTROL OF POST-OPERATIVE URINARY RETENTION WITH DORYL

BY R. OFFICER, M.B., B.S. Melb.
RESIDENT SURGICAL OFFICER AT ST. MARK'S HOSPITAL, LONDON; AND
J. C. STEWART, M.B. Melb., F.R.C.S. Eng.
HOUSE SURGEON AT THE HOSPITAL

AFTER the publications of Maxwell (1937) and Chassar Moir (1937) Doryl was given as a routine at St. Mark's Hospital in cases of post-operative urinary retention. This paper records the results obtained in 55 consecutive cases in which retention followed operations for rectal diseases.

Doryl is carbaminoylcholine chloride; it is a derivative of acetylcholine but has a more prolonged action. It is manufactured by E. Merck, and is issued in 1 c.cm. ampoules containing 0·00025 g.

EXPERIMENTAL FINDINGS

The effect of doryl on intravesical pressure was tested in four patients with retention. A catheter was passed into the bladder and connected to a water manometer; 1 c.cm. of doryl was then injected subcutaneously and the pressure variations were observed. The results were as follows:—

CASE 1.—Volume in bladder 780 c.cm. Initial pressure 13 cm. water. Pressure rose immediately after the injection, reaching 38 cm. water in 7 minutes. This pressure was maintained for 5 minutes and then fell steadily.

CASE 2.—Volume in bladder 780 c.cm. Initial pressure 18 cm. water. Pressure rose immediately after injection, reaching 33 cm. water in 10 minutes, which pressure was maintained for a further 10 minutes after which there was a steady fall.

CASE 3.—Volume in bladder 500 c.cm. Initial pressure 8 cm. water. No change was observed for 7 minutes after injection and then the pressure rose gradually, reaching 16 cm. water after a further 8 minutes. This level maintained for 5 minutes, after which there was a steady fall.

CASE 4.—Volume in bladder 1030 c.cm. Initial pressure 22–26 cm. water. The variation in pressure was due to bladder contractions which took place at the rate of two per minute. Pressure began to rise immediately after injection and in 5 minutes reached 55–65 cm. water, varying 10 cm. with bladder contractions. As the patient was then experiencing severe pain the bladder was emptied although pressure was still rising.

In the first three cases the bladder was completely atonic, the pressure varying but 1 cm. water with respirations. In Case 4, however, active contractions were present and the effect of doryl was much more conspicuous. The volume of urine was greatest in this patient.

It is seen that the maximum effect of doryl is reached within 15 minutes of administration and thereafter passes off. Hence any delay in providing the patient with facilities for micturition will negative the value of the drug, and a receptacle should be provided before the injection is given.

RESULTS

In none of the 55 cases was doryl injected until the condition of the bladder was such as would formerly have rendered catheterisation necessary. In the accompanying Table the results are classified according to the following criteria:—

1. *Successes*, in which the bladder was completely emptied within 30 minutes of the injection.
2. *Partial successes*, in which urine was passed but the bladder not completely emptied. Catheterisation was usually required later.
3. *Failures*, in which no urine was passed. Catheterisation required.

Table showing Successes, Partial Successes, and Failures

Cases.	Successes.	Partial successes.	Failures.
Hæmorrhoids	24	3	4
Fistula	8	1	3
Carcinoma of rectum ..	2	1	4
Intraspinal alcohol ..	1	..	..
Prolapse of rectum ..	1	..	..
Dissection of inguinal glands	1	..	..
Laparotomy	1	..	1
Total	38	5	12

All the patients except 2 received a single subcutaneous injection of 1 c.cm. of doryl. Of the two exceptions one had had a perineal excision of the rectum, the other an intrathecal injection of absolute alcohol for pain due to an inoperable rectal carcinoma. Both had retention with overflow and complete loss of bladder sensation, with no apparent mechanical obstruction. Doryl was found to empty

each of these two bladders completely, and its administration was continued twice daily with success for three weeks.

It will be seen that one-third of the failures followed excision of the rectum. In such cases bladder function is disturbed by operative trauma, which necessitates an in-dwelling catheter for four days; and doryl was tried only after removal of the catheter. Of the remaining failures, two had enlarged prostates, which have subsequently required operation.

Side-effects.—Doryl is a parasympathetic stimulant and consequently its action is not confined to the bladder. Patients complained of one or more of the following symptoms: salivation, sweating, nausea, shivering, faintness, passage of flatus. These were only temporary and caused no anxiety.

SUMMARY AND CONCLUSIONS

The effect of Doryl in the treatment of 55 cases of post-operative urinary retention is recorded. In a small series of experiments it was found to cause a considerable but short-lived rise of intravesical pressure.

Doryl is useful in the relief of post-operative retention of urine. It has less effect in cases with mechanical obstruction, but it is still worthy of trial before resorting to catheterisation.

Minor side-effects make its use inadvisable for very ill or shocked patients.

In two cases, in which the condition of the bladder resembled that seen with certain cord lesions, administration of doryl twice daily for three weeks caused no harm. It is therefore suggested that doryl should be given an extensive trial in the treatment of urinary retention associated with spinal cord injuries or tumours or diseases.

We wish to thank the honorary staff of St. Mark's Hospital for their permission to carry out and publish this investigation.

REFERENCES

Maxwell, J. S. (1937) *Lancet*, **1**, 263.
Moir, J. C. (1937) *Ibid*, p. 261.

Clinical and Laboratory Notes

DIPHTHERITIC HEMIPLEGIA

By Joseph Morrow Kennedy, M.B. Belf., D.P.H.
SENIOR MEDICAL OFFICER, LODGE MOOR HOSPITAL, SHEFFIELD

Diphtheritic hemiplegia is a very rare event, and quite distinct from the more common paralysis following diphtheria. The following case has been the first definite example I have seen amongst 6400 cases of diphtheria treated at Lodge Moor Hospital during a period of seven years.

According to Rolleston (1929) barely a hundred cases have been recorded since the first example was described by Sir William Gull in 1859. Ker (1929) had only seen one definite example in over 10,000 cases, a small girl of nine years developing complete right-sided hemiplegia with aphasia in the sixth week of the illness, at a moment when she was already suffering from extensive post-diphtheritic paralysis. Goodall (1928) had only seen one case during his extensive experience with the Metropolitan Asylums Board.

CLINICAL RECORD

A girl aged 7 was admitted to Lodge Moor Hospital on Nov. 24th, 1936, suffering from diphtheria, on her fifth day of illness. Previous illness: measles, mumps. First felt ill Nov. 20th, headache, sore-throat, vomiting. Profuse nasal discharge, Nov. 21st. Seen by the family doctor on the 22nd and 23rd, when a swab from the throat was taken and found positive.

On admission.—Fauces very œdematous with a general injection. Tonsils and uvula completely covered with well-defined false membrane which extended forward over the soft palate to the junction of the hard palate. Severe cervical adenitis, with cellular œdema, producing the characteristic "bull-neck." Temperature 99° F. Typical diphtheritic fœtid odour. Skin smooth, supple, but dry. Heart satisfactory. Albuminuria present. She was a very bright and intelligent child, and quite talkative, notwithstanding the seriousness of her condition.

Progress.—Diphtheria antitoxin, 40,000 units, was given intramuscularly, followed in three hours time by a further 40,000 units intravenously. Two days after admission epistaxis and hæmorrhage from the throat occurred, with separation of the false membrane. On the tenth day of illness (5 days after admission) the throat was clean and free from all membrane. Her skin was supple, heart satisfactory, she was taking fluids well, and passing 15–20 oz. of urine in the twenty-four hours. A heavy trace of albumin was present.

On the twelfth day of illness she vomited, and her heart was then found to have an occasional stumble, and the following day gallop rhythm was present. Cardiac arrhythmia continued until the eighteenth day of illness, when a definite improvement was noted, as only an occasional stumble was heard. On the twenty-first day of illness she was unusually quiet, which was most noticeable, as she was an exceedingly cheery patient. She made no attempt to talk, and when spoken to, or asked simple questions, began weeping. During the afternoon she was found to have some weakness of the right side of her face, but there was no paralysis of the limbs.

Central nervous system.—Examination later the same evening showed that she had complete aphasia. Eyes: pupils equal and reacting to light, fundi normal. Right facial paralysis and, on protruding, tongue was deviated to the right. Complete flaccid paralysis of the right arm and right leg. Reflexes: deep reflexes absent on the right side; superficial reflexes right abdominal absent, plantar response, Babinski's sign well marked on the right side. Incontinence of urine was present, and was followed by retention, when catheterisation was done for two days, followed by normal micturition. Sensation, as far as could be ascertained, appeared to be unimpaired. Consciousness was never lost and she remained quite intelligent and bright during the paralysis. Lumbar puncture was performed and 15 c.cm. of cerebro-spinal fluid drawn off. There was no increase in pressure, the fluid was perfectly clear, protein normal, and no red cells present.

Further progress.—Heart rhythm was now normal, no murmurs, soft and somewhat muffled sounds. Blood pressure, 75 mm. Hg systolic, 25 mm. diastolic. She remained in a state of paralysis with aphasia until the twenty-ninth day of disease—i.e., 9 days after the onset of the hemiplegia—when she distinctly said the word "No." Speech steadily improved from this time. At the same time it was found that she was developing post-diphtheritic paralysis, nasal voice, immobile palate, and regurgitation on drinking fluids, which became so alarming that nasal feeding was carried out. Strabismus was present, due to paresis of the left external rectus. The speech was the first to improve. This was followed by facial improvement, then arm, and, lastly, leg. She was discharged from hospital three months later, on her 125th day of illness, having been in hospital 121 days. Her condition was very satisfactory. She was speaking quite normally and her parents did not detect any alteration whatever in her speech. She was able to walk very well and was remarkably steady when requested to stand on one leg. She had a good functional use of her arms, whilst the only sequelæ were a slight degree of pes cavus and difficulty in writing or sewing. The reflexes had all returned and the plantar response was flexion.

DISCUSSION

Hemiplegia in diphtheria is due to a vascular lesion, and is considered by most authorities to be due to cerebral embolism secondary to parietal or

apical endocarditis, whilst some authorities consider that the condition is due to embolism with thrombosis.

In considering the above patient I am inclined to think that her condition was due to a primary cerebral thrombosis, for the following reasons :—

(*a*) The onset was gradual, over a period of nearly twenty-four hours before paralysis was established, aphasia being the first symptom detected.

(*b*) The extremely low blood pressure, 75 mm. Hg systolic, 25 mm. diastolic.

(*c*) Consciousness was never lost, the patient remaining exceptionally bright and intelligent during the paralytic stage.

(*d*) The absence of R.B.C. from the cerebro-spinal fluid and the latter being of normal pressure.

(*e*) The slow, steady return of power, leaving very little sequelæ.

Rolleston (1913) describes six cases of hemiplegia following diphtheria, of which five developed right hemiplegia with aphasia, and one left hemiplegia. Benn and Alstead (1931) record a case of diphtheritic hemiplegia that affected the right side with aphasia, which they consider was probably due to a cerebral thrombosis.

It is rather interesting to note that of the above cases there was only one affecting the left side, the remainder affecting the right side with aphasia, demonstrating the left middle cerebral artery as being the vessel selected in diphtheritic lesions, as in other conditions producing hemiplegia.

I am indebted to Dr. J. Clark, medical superintendent of the Sheffield City Hospitals, for permission to publish this case.

REFERENCES

Benn, E. C., and Alstead, S. (1931) *Lancet*, **2**, 1131.
Goodall, E. H. (1928) Infectious Diseases, London, p. 181.
Ker, C. B. (1929) *Ibid*, p. 409.
Laurent, L. J. (1934) *Proc. roy. Soc. Med.* **27**, 1433.
Rolleston, J. D. (1913) *Clin. J.* **42**, 12.
— (1929) Acute Infectious Diseases, London, p. 31.

LIVER ABSCESS CAUSED BY HÆMOLYTIC *STAPHYLOCOCCUS AUREUS*

BY STANLEY O. AYLETT, B.Sc., M.B. Lond., F.R.C.S. Eng.

RESIDENT SURGICAL OFFICER, PRINCESS BEATRICE HOSPITAL, LONDON

THE patient, a man aged 27, in good health, was seized whilst at work with acute pain in the umbilical region. This lasted for the week before he came up to hospital, during which time he stayed away from his work. There was no vomiting or nausea, and his appetite was good, the food seeming to have no effect on the pain. This attack of pain was accompanied by unusual constipation which was relieved by purgatives. In addition he complained of much sweating during the attack.

In view of the tenderness and rigidity below the left subcostal margin when he was first examined, a barium meal was ordered with a view to excluding a gastric lesion. This was reported on negatively. Seen again in a week's time he complained of a swelling in the upper part of his abdominal wall, although the original pain had disappeared. He looked ill and cachectic. A swelling some 3 × 4 in. was now seen protruding from under the left subcostal margin. There was extreme tenderness and rigidity over the fluctuating swelling, the edges of which were ill-defined. When he contracted the rectal muscles the mass was less obvious. The patient had a pulse-rate of 95, a temperature of 100·5° F., and a white cell count of 19,000.

In spite of the negative radiogram, a diagnosis of perigastric abscess was made and a laparotomy performed. An incision was made over the swelling, the rectus muscle being found œdematous and swollen. The posterior rectus sheath and peritoneum were thickened, and on incising, thick pus welled out. This was seen to come from an abscess cavity in the anterior surface of the lower edge of the left lobe of the liver. There were a few recent adhesions and the lower part of the abdominal cavity was shut off. As far as could be ascertained the stomach was normal. A drainage-tube was placed in the abscess cavity and the abdominal wound sutured. The patient was given intravenous salines and Prontosil Soluble intramuscularly. His condition improved greatly during the next few days but on the ninth day the abdominal wall burst. It was resutured and from then on the patient made an uninterrupted recovery.

The case is of interest in that there was no indication of any primary lesion. The patient, a railway porter, had never been abroad, and examination of his fæces for any dysenteric organisms showed no abnormality. Repeated cultures of the pus from the abscess cavity grew hæmolytic *Staphylococcus aureus*.

My thanks are due to Mr. A. Lawrence Abel for permission to publish the details of this case.

AVERTIN AND PARALDEHYDE AS BASAL NARCOTICS FOR CHILDREN

BY REX BINNING, M.R.C.S. Eng.

ANÆSTHETIST TO THE ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, BRIGHTON, AND THE BRIGHTON AND HOVE DENTAL HOSPITAL

IN a small series of 50 cases I have compared 32 children given 0·1 gramme of Avertin per kilo with 18 children given 1 drachm of paraldehyde per stone according to the technique described by Sington (1936). The ages were as follows :—

Age in years.	Avertin.	Paraldehyde.	Age in years.	Avertin.	Paraldehyde.
2	1	1	9	—	1
3	3	3	10	1	—
4	7	3	11	1	—
5	12	3	12	1	—
6	1	3	15	1	—
7	3	1		—	—
8	1	3	Total	32	18

There were 29 boys and 21 girls in this series. I recorded the blood pressure in each case the day before operation and immediately before induction of anæsthesia. This was approximately 30 min. after the avertin had been given and 90 min. after the paraldehyde. The average fall in blood pressure was as follows (mm. Hg).

	Systolic.	Diastolic.
Avertin	7·9	4·9
Paraldehyde	10·5	5·5

There were no deaths and no complications that could be attributed to the anæsthetic used. Two cases only were not asleep when they arrived at the theatre owing to failure to retain the solution. One had had avertin and the other paraldehyde. With these exceptions all these children were saved the very real mental trauma of a terrifying journey to the theatre, an anxious wait in the ante-room followed by induction of anæsthesia. Some cases were for plastic operations which required more than one anæsthetic at short intervals. The value of basal narcosis in these cases was particularly great.

Sington (1936) states: "Avertin causes an even greater fall in blood pressure than the barbiturates and so *is definitely contraindicated in children*" (italics mine). He recommends paraldehyde or Nembutal.

Nosworthy (1935), on the other hand, states: "Children detoxicate avertin very rapidly; up to the age of fifteen they may be given 0·11 g. per kilo with perfect safety." Hewer (1937) also says: "It has recently been shown, however, that children tolerate the drug better than adults, and, if given in doses of 0·175 g. per kilogramme, combined with morphine, scopolamine and a field block, no additional anæsthesia is required in 75 per cent. of cases."

COMMENTS

I do not attach undue weight to the actual figures quoted above. They are based on an insufficient number of cases. They do show however that the difference in the fall in blood pressure produced by avertin and paraldehyde is so small as to be negligible. I found therefore no evidence whatever to confirm Sington's condemnation of avertin in children, and my experience tends to confirm the safety of avertin mentioned by Nosworthy and Hewer.

Comparing the two drugs generally I found that paraldehyde requires more patience in its administration, is less certain in its action, has an offensive odour, and requires the addition of ether to nitrous oxide and oxygen to obtain the same plane of anæsthesia as is obtained by avertin and nitrous oxide and oxygen alone.

REFERENCES

Hewer, C. L. (1937) Recent Advances in Anæsthesia and Analgesia, 2ED, London.
Nosworthy, M. D. (1935) Theory and Practice of Anæsthesia.
Sington, H. (1936) *Practitioner*, **136**, 468.

REVIEWS AND NOTICES OF BOOKS

An Outline of General Physiology

By L. V. HEILBRUNN, Associate Professor of Zoology in the University of Pennsylvania. London: W. B. Saunders Company. 1937. Pp. 603. 21*s*.

THE line of demarcation between the more fundamental and academic physiology, and that brand of vocationally directed teaching for which it is now fashionable to clamour, is becoming more clear year by year. As Prof. Heilbrunn points out in his preface, general physiology is a science in its own right, and should never degenerate into a dilute mammalian physiology. On the other hand, time does not allow, nor training compel, the student of medicine to enter deeply into the fundamental biological aspect of general physiology. That aspect must be reserved for the student of pure science and for the potential investigator. Prof. Heilbrunn's object here is to provide an account of contemporary general physiology, and to include such references to original literature as will enable the reader to follow into further detail the subjects with which it deals. The book arose out of the author's teaching experience and the needs of his own students, especially those who have carried out research with him; it represents a mine of valuable up-to-date information and must have cost a fabulous amount of hard work. The style is clear and searching, the examples well chosen, and the whole field thoroughly well covered. The references alone should prove very valuable. This is the kind of general physiology that would have delighted Claude Bernard or Sir William Bayliss, and in fact is a modern presentation of that aspect of the subject to which they, in their own times, contributed so much. The work will appeal in this country especially to teachers and investigators in physiology, to students taking honours degrees in physiology or biology, and to a few exceptional medical students. Prof. Heilbrunn's attitude to it is best given in his own words: "Some writers in presenting a scientific subject attempt to oversimplify it in order to make it more understandable. I have known textbook authors who believed in teaching simple facts, right or wrong, rather than run the risk of confusing the student. Such a scheme may have advantages, but I believe that any tampering with truth is extremely dangerous. It is far better to acquaint students with the uncertainties of knowledge in such a frontier subject as general physiology, and to make them sceptical of new experiments. If there were more teaching of this sort, our laymen and our physicians might not be so gullible in accepting false discoveries."

We congratulate the author on his splendid work, and would prophesy that his modest hope that "the book may have sufficient appeal to warrant a second edition" will be realised.

Recent Advances in the Study of Rheumatism

Second edition. By FREDERICK JOHN POYNTON, M.D., F.R.C.P. Lond., Consulting Physician, University College Hospital and the Hospital for Sick Children, Great Ormond-street; and BERNARD SCHLESINGER, M.A., M.D. Camb., F.R.C.P. Lond., Physician to the Children's Department, Royal Northern Hospital; Physician to Out-patients, Hospital for Sick Children, Great Ormond-street. London: J. and A. Churchill. 1937. Pp. 380. 15*s*.

THIS member of the Recent Advances Series has grown from 313 to 380 pages. It is still divided into two parts, dealing respectively with the Acute Rheumatism and the Chronic Rheumatism of the first edition, although, it would seem by some accident, these titles have been omitted. The first part is brought up to date by fuller discussions of the morbid anatomy of acute rheumatism, of its ætiology (including the virus work), and of the use of such remedies as pyramidon and protein shock in its treatment, as well as by numerous minor additions and alterations. In connexion with the risk that pyramidon may cause agranulocytosis, it is interesting that the authors have never seen this sequel in children, in whom, by contrast with adults, they regard the drug as quite safe as well as valuable. This first half is the more satisfactory part of the book, for though we are ignorant of the cause of acute rheumatism and have no specific treatment for it at our disposal, yet the knowledge we have of its natural history is reasonably full, precise, and well documented, and the more recent contributions to that knowledge are here clearly set out. The second half, although largley rewritten and considerably extended, still makes disappointing reading. It is not the authors' fault. In "chronic rheumatism" we do not know whether we are dealing with one disease or many; we suspect that in many cases multiple causes may be acting simultaneously, and medicine has hitherto usually thought in terms of one disease—one cause; the methods and variants of treatment are numerous, and facts on which to judge their results are extremely scanty. In this obscure atmosphere the authors can do no more than point to a few observations of value, and indicate the more conspicuous trends of fashion and opinion. With the help of Dr. Frank Howitt in the chapter on physiotherapy and of Mr. Eric Lloyd in that on surgical treatment, they do their

best, preserving throughout a vigorous scepticism, which is essential to any intelligent advance in our understanding of chronic rheumatism, though it will make little appeal to the reader who cannot see further than his immediate desire for a new treatment to apply to Mrs. X's joints. Their attitude is pithily expressed in the following comment on the wisdom of offering to debilitated rheumatic patients an abundance of good food and even an allowance of good drink: "Stung by bees, giddy with histamine, sore from sulphur injections, itching from gold, short of food and threatened with wholesale dental extractions, we ourselves prefer this pleasanter form of treatment, rather than to prolong our rheumatic existence on even the most modern principles."

Clinical Electrocardiography

Sixth edition. By Sir THOMAS LEWIS, C.B.E., M.D., D.Sc., LL.D., F.R.C.P., F.R.S., Physician in charge of the Department of Clinical Research, University College Hospital. London: Shaw and Sons. 1937. Pp. 128. 8s. 6d.

A STRAIGHTFORWARD and up-to-date account is here given of the principles and technique of the electrocardiographic method. All the important abnormalities of rhythm are dealt with, and the author has emphasised the importance of electrocardiography in determining the state of the heart muscle. In future editions some further account of the Q-wave would be welcome; pathological variations of this wave are certainly more frequent than auricular flutter to which a whole chapter is devoted. A discussion by Sir Thomas of lead IV, which is coming into wider use, would also be appreciated by the many clinicians and students who study his opinions with respectful attention.

Legal Medicine and Toxicology

By THOMAS A. GONZALES, M.D., Acting Chief Medical Examiner, City of New York; Associate Professor of Forensic Medicine, New York University College of Medicine; and MORGAN VANCE, M.D., and MILTON HEPBURN, M.D., Assistant Medical Examiners to the City and Assistant Professors of Forensic Medicine to the College. London: D. Appleton-Century Company. 1937. Pp. 754. 45s.

AMERICAN works on forensic medicine suffer from the lack of uniformity in the law; for no single volume can relate concisely the law with regard to medicine in 45 different States. We make no complaint therefore at the discovery that this book is primarily a record of the personal experience of the three distinguished authors when working as "medical examiners" (medico-legal pathologists) to the City of New York in the office of the chief medical examiner where some 15,000 autopsies are conducted every year. They have rather unwisely tried to combine a book of reference for the expert with an introduction to medico-legal science for the student, and while succeeding in the first aim have produced a book too full of detail to appeal to the student. To the expert we commend it in particular for its lavish original illustrations: of the 650 photographs few could be bettered and they form a more comprehensive and reliable collection than any we have yet seen. The photomicrographs are equally good but the art plates show a lack of precision inadmissible in a subject so exact—and exacting—as forensic medicine. On the whole the text is less well balanced than the illustrations. There are excellent sections, for example on blunt wounds or blood-grouping in its hereditary aspects, while others such as those on industrial disease, drowning, and decomposition in water are incomplete. Certain sections suggest lack of experience on the part of the authors; for example, that on identification. The chapter on sudden death from natural causes, a subject which covers some 80 per cent. of all medico-legal practice, is admirable. The references seem rather to reflect the special interests of the particular author than to satisfy the natural desire of the reader for a list of authoritative or controversial works in every branch of the subject. Only nine references are given in the section on non-alkaloidal organic poisons, and of these four are concerned with dinitrophenol; there is no reference to the extensive and important work published on the barbiturates.

The section on toxicology is comprehensive enough but makes unnecessarily dull reading. The selection of analytical method is not always in accord with the best practice in this country. It would be unfair to quibble at what must depend upon personal preference, but where good alternative methods are available they ought not to be completely ignored.

1. Zehn Vorlesungen über Kymographie

By PLEIKART STUMPF, Professor in the University of Munich. Leipzig: Georg Thieme. 1937. Pp. 112. RM.8.70.

2. Röntgenkymographische Bewegungslehre Innerer Organe

BY PLEIKART STUMPF, H. H. WEBER (Berne), G. A. WELTZ (Munich), and others. Same publisher. Pp. 516. RM.42.

THESE two books are an exposition of X ray kymography as this has been developed by Stumpf and his co-workers. The first is a general account in lecture form, covering briefly all the organs to which the method has been applied. The section devoted to the heart and great vessels is the most interesting. The author shows how by measuring the movement of the borders of these organs it is possible to supplement the information obtained by simpler means. He shows for instance how to estimate the extent of a cardiac infarct, to demonstrate sclerosis of the heart and aorta, to judge the thickness of the walls of aneurysms, and to diagnose otherwise confusing shadows in the region of the right hilum. In the lungs Stumpf claims that measurements of the movements of the diaphragm and ribs and of the elasticity of diseased lung-tissue leads to conclusions of far-reaching practical importance. We hardly however need kymography to appreciate that "there are upper and lower limits to the movement of breathing," or that "the mechanism of breathing serves the purpose of dilating the chest during inspiration and contracting it during expiration." The two lectures on the stomach and duodenum contain much elementary physiology and hardly convince the reader that in this region the method adds much of practical value to the knowledge which can be gained by careful screening. The author admits that kymography has so far brought no new facts to light about intestinal movements. In the renal system movements of the ureters can be recorded. The book closes with a tabulated summary.

The second book, of which the first is a synopsis, begins with a detailed account by Stumpf of the method of taking and reading kymographs. He also describes in detail the movements of the normal heart in various physiological and pathological conditions and the movements of other organs due

to the heart-beat. This information is supplemented by an article by Weltz who also contributes a chapter on asthma. Böhme describes experimental work on the changes in the lumen of the heart and vessels. The section on respiration is from the pen of Weber and Von der Weth, the latter paying much attention to the value of the method in assessing the results of collapse therapy, thoracoplasty, and other surgical procedures. Dahm and Stumpf deal with the intestinal tract, Sack with the urogenital tract, while Schoen contributes a short chapter on substernal goitre. All conceivable movements of the internal organs and their inter-relations under all conceivable conditions are described with characteristic thoroughness.

A pocket in the cover of each book contains a darkened celluloid film having thin clear parallel lines. When this is moved over those illustrations which are reduced to the appropriate scale the movements may be seen as in a cinematograph. They are extremely fascinating to watch, even if some of the statements in the text are difficult to confirm. No doubt something is lost in reproduction.

Pocket Atlas of Anatomy

Third edition. By VICTOR PAUCHET and S. DUPRET. London: Humphrey Milford, Oxford University Press. 1937. Pp. 368. 12*s*. 6*d*.

THIS atlas has been designed for the use of students of anatomy, clinical clerks, and surgeons who want to revise their knowledge of various anatomical regions at short notice. The drawings are all schematic, and in many of the illustrations arteries, muscles, and viscera have been coloured in various shades of red to make them easy to identify. The drawings are sufficiently accurate for their purpose and can be understood at a glance. The atlas should certainly be useful to surgeons and general practitioners for it will enable them to refresh their memory of gross anatomical facts when confronted with unusual clinical cases. For the student of anatomy it has little value; it is too schematic for the beginner and not full enough for the advanced student. Possibly examinees may find it a placebo while waiting at the entrance to the examination hall. There are no changes in this third edition apart from the adoption of the nomenclature suggested by the Anatomical Society at Birmingham in 1933.

Manual of Cosmetics

English edition. By CHARLES LÁZÁR, M.D. Budapest. London: Henry Kimpton. 1937. Pp. 318. 12*s*. 6*d*.

THE practice of cosmetics is a sort of No Man's Land where there seems to be ample space and even a need alike for the highly qualified surgeon, the experienced dermatologist, and the more or less fashionable beauty parlour. In this country there are few, if any, doctors who have given much time to the study of cosmetics or are even aware of the possibilities which discoveries in physics and pharmacology have opened up. A study of this manual will interest many of our readers. The author, who must not be confused with his famous namesake Lassar, has evidently approached the subject from a basis of solid dermatological experience, and has accumulated knowledge that will be found useful even by experts on the skin. The plan of the book, which is divided into 26 chapters, is original. A brief anatomical description introduces the student to the structural peculiarities of the epidermis and its appendages. An elementary essay follows on the cosmetic uses of electricity, and the succeeding chapters, on the care of the skin, disorders of sebaceous secretion, hypertrichosis and so forth, are all composed in the form of essays, without much regard to the standard tables which are usually a feature of modern text-books of dermatology. This rather haphazard arrangement (or lack of it) makes it difficult to use the information, so lavishly provided, in the treatment of any particular case, for it is likely to be scattered between two or more chapters not directly associated. The book therefore needs reading from cover to cover, and its cursory style and the absence of subheadings and tables should make this an easy task.

The chapter on pharmacology is simple and needs no great chemical knowledge for its comprehension. We deplore the method adopted of writing prescriptions in grains, which are applied not only to the drug but to its solvent. The average dispenser would gasp if confronted with a formula containing, for instance, tincture of benzoin 40 grains, glacial acetic acid 100 grains, and eau de Cologne 1860 grains. The chapter on electrolysis is excellent; it will be news to most readers that electrolysis though slower is a much more efficient treatment for hypertrichosis than the more modern diathermy needle. Much space is given to the indications for the use of the actual cautery, which gives first-class results in certain types of case and is much more limited in its action and easier to control than either electrolysis, diathermy, or freezing with the CO_2 pencil. In a comment on this pencil, which occupies a full chapter, stress is laid on the difficulty in estimating the cutaneous depth of the lesion to be destroyed. Freezing has the great advantage that it can be repeated any number of times without unduly distressing the patient or risking the development of gross or unsightly scars. It is noteworthy that the drilling machine originally invented by Kromayer many years ago for the removal of stigmata and small tumours is given a new lease of life in chapter XVIII. It is said to have the great advantage of being practically painless in application.

Handbook of Microscopical Technique

Second edition. Edited by C. E. MCCLUNG, Ph.D., Professor of Zoology and Director, Zoological Laboratory, University of Pennsylvania. London: Humphrey Milford, Oxford University Press. 1937. Pp. 698. 42*s*.

THIS work first appeared nine years ago as a companion to the volumes on general and special cytology edited by Dr. Cowdry. It consists of a collection of separate sections written by experts who can and do give the reader the benefit of personal experience in the modification of formulæ and methods. The disadvantage of this sort of compilation is that there is a danger of the work being incomplete; here, for example, we find no method for the staining of spirochætes.

The editor has enlisted the services of nine new contributors, most of whom have supplied sections on subjects not previously discussed; including freehand microdissection (S. Horstadius and H. McE. Knower), methods for staining boutons terminaux (W. C. Gibson), fused quartz rod method for illuminating living structures (M. W. Knisely), microincineration (G. H. Scott), the centrifuge microscope (Ethel B. Harvey), and fluorescent microscopy (C. J. Sutro). Most of the other chapters have been revised, and some, such as those on hæmato-

logical, dental, and general neurological technique, have been largely rewritten. An excellent standard has been maintained, and omissions are negligible. This is much more than a treatise on staining methods; it includes practically all the technical manipulations which the reader is ever likely to require, described in an exact and lucid manner, and is now a thoroughly up-to-date compendium of advanced microscopical technique.

Die inneren Erkrankungen im Alter

By Univ.-Prof. Dr. ALBERT MÜLLER-DEHAM. Vienna: Julius Springer. 1937. Pp. 408. RM.24.

STATISTICIANS tell us that of every 100 people to-day 23 are under 14 years and 12 are over 60, whereas in thirty years time there will be but 10 children to 23 old people. So must the pædiatrician give way to the gerontologist. But apart from such hypothetical peeps into the future, the diseases of the later years loom ever larger in the Registrar-General's reports; and though they may seem as far removed from general medicine as the diseases of children there is very much less information about them available to the practitioner.

For twelve years Prof. Müller-Deham has been in charge of the department of internal medicine in the Lainz Infirmary in Vienna, and in this book he discusses the illnesses of old people as he has encountered them there. The early chapters deal with senility and death, the anatomy and physiology of old age, the changes in age-distribution of the population, the effects of occupation on length of life, and general diagnosis and treatment. In the rest of the work the internal diseases of the aged are described systematically, but the formal text-book style is avoided by the inclusion of personal observations and opinions. Since the book is intended primarily for the general practitioner, a knowledge of "normal" medicine is assumed and rarities are excluded. Stress is mainly laid upon diagnosis and treatment, and difficulties and failures are frankly discussed. One may not agree with the conclusions reached, though these are usually orthodox enough, but the book serves a valuable purpose if only in showing the need for more attention to this branch of medicine.

NEW INVENTIONS

HIGH-PRESSURE INFILTRATION APPARATUS FOR LOCAL ANÆSTHESIA

THE advantages of pressure infiltration in local anæsthetic infiltration need not be fully enumerated here. Uniformity and good spread are among the more important. In areas where the tissues are dense—e.g., the scalp and the back—a pressure reserve is invaluable. The apparatus to be described abolishes the thumb and finger cramp experienced from the use of an ordinary syringe. Its essentials are:

(1) A cylinder of compressed air or gas (A in Fig. 1) (O_2, N_2O, or CO_2 will do).
(2) The pressure chamber to be described (B).
(3) The needle (C) which has a special on and off switch and a side piece for aspirating (D).

The *pressure chamber* is in three main pieces: the base with gas inlet (Fig. 2 (A)), the flanged rubber diaphragm (B), and the top (C) which is drilled for the dipstick contents-gauge (D) and the outlet. All

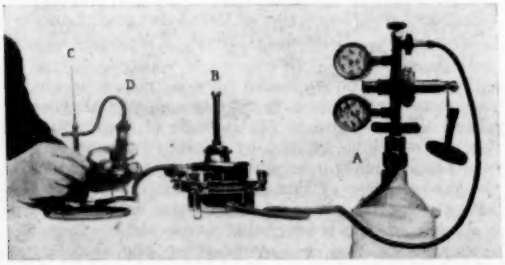


FIG. 1.—The apparatus assembled: (A) compressed gas cylinder; (B) pressure chamber (see Fig. 2); (C) needle; (D) aspirating side-piece.

parts can be boiled and the chamber is taken apart readily for the purpose. The apparatus is assembled by fitting the diaphragm in the base and clamping on the top. The apparatus is then filled, or partially filled, with the anæsthetic solution desired and the top gauge screwed on. The air inlet is fastened in the base by a bayonet joint and the needle outlet similarly attached to the upper part. Air is blown into the base and this compresses the rubber diaphragm and delivers a steady stream of liquid from the needle. It is to be noted that the air or gas does not come in contact with the novocain at all. At the needle end there is a quick thumb switch for the surgeon to

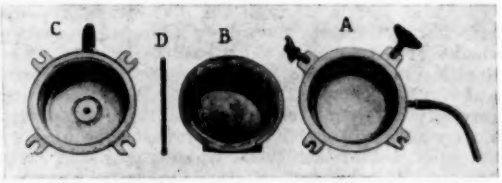


FIG. 2.—Components of the pressure chamber: (A) base with gas inlet; (B) rubber diaphragm; (C) top with outlet and drilled for (D) dipstick.

open or close the flow. All joints are of the bayonet type.

The *needle* has a side piece with tubing to a syringe held by the assistant so that aspiration can be performed in very deep infiltration, such as splanchnic anæsthesia when it is essential to know that the needle is not in a vein. Ordinarily, this point does not arise.

The *cylinder* must have an accurate reducing valve. Its usual working pressure is 5–10 lb. per sq. in., but in dense tissues I have used up to 20 lb. per sq. in. The apparatus is tested up to 40 lb. per sq. in.

There is only one part which will wear out and that is the rubber diaphragm. I have had my present one over six months and it appears perfect. The makers assure me it is an inexpensive replacement.

I have used the apparatus with great satisfaction in a variety of cases. In the minor injections it holds no advantage over a simple syringe, but in the major its ease and simplicity is delightful.

I am indebted to the Surgical Equipment Supplies Ltd., who made the apparatus for me, and also to Mr. E. Lloyd, of the Bristol Royal Infirmary, for suggestions about the gauge. The cost, complete with needles, is about seven guineas. I am using this apparatus for research with the aid of a grant from the Colston Research Society.

Bristol. WILFRED WILLWAY, F.R.C.S. Eng.

THE LANCET

LONDON: SATURDAY, OCTOBER 9, 1937

UNITS IN A HEALTH CAMPAIGN

THE PRIME MINISTER inaugurated the National Health Campaign at a reception held on Thursday of last week by the Central Council for Health Education at the London School of Hygiene and Tropical Medicine. It is something of a portent for the head of the Government to deal intimately with the factors of personal health, but Mr. CHAMBERLAIN was speaking to members of local authorities—mayors, deputy mayors, and the like—and it will be remembered that he comes himself of a family with a high sense of civic duty and responsibility. "As an old local government administrator," he said, "with a very vivid recollection of how closely the work on which you are engaged brings you into touch with the daily life of the people, I am sure you realise how large a part the presence or absence of full physical health and vigour plays in their happiness. The greatest blessing we can confer upon the community is to save them from the disabilities that bear down the man or woman whose body is a constant source of suffering or discomfort, and in this campaign for which I ask your whole-hearted support we shall, I am convinced, be doing a work which will deserve and receive the heartfelt gratitude of the country." These thrilling words were broadcast throughout the country and were the more impressive to those few who were privileged to see the PRIME MINISTER speak, owing to the fact that they were delivered and not read. He described the range of facilities provided by the health services as unsurpassed by any country in the world. People have only to stretch out their hands to take what is offered them, but he did not underrate the difficulty of persuading people to take full advantage of them. It may be, he said, that the mother is too shy to go to the antenatal clinic; maybe she does not realise that the child's teeth are decaying. It may be that the person who has a tiresome cough is afraid to consult the doctor lest he or she should be told that they have been attacked by tuberculosis. It may be that the child does not like milk or that the mother thinks that because it is cheap it is also nasty. Whatever the cause we have plenty of evidence that in many places these health services are still not appreciated as they should be.

Lord HORDER, who spoke later at the reception, said there was no question of the doctor's willingness to help in the campaign. We will, he said, help you to the utmost of our power, but to decide how to help was not so easy. The best things the doctor does are bound up with the daily routine of his life. He makes contact with the human material for whose benefit the health services exist. It is he who deals with the individual, and it is the individual embedded in his environment to whom appeal must ultimately be made. To get the benefits across, the doctor is a link that is vital. He more than anyone knows if the machine really works and where, if it does not, the trouble lies. Too often, he said, the doctor finds the individual muted by worries, static in regard to his own interests, bewildered it may be by the mass of official chits and sanctions, even a little hostile at times. How wise you are, Sir, he said to the Minister of Health, to invoke the doctor. He has one tremendous pull; he is the friend of the man, the woman, and the child whom you seek to help, and he has their entire confidence. Be it remembered that he is himself human and needs encouragement in his fight, a fight that is not only against disease and unfitness but against economics also. Later on, he thought, the Ministry might enlarge the field of the appeal. There is, he said, the basic matter of food, in which doctors are deeply concerned and involved. Other agencies which can be usefully coördinated to the main purposes of national fitness should not be forgotten, the hospitals, the universities and research institutes, the public medical services, and the provident associations.

Australia, too, as our correspondent tells on another page, is also considering its standard of health. It is, said Prof. HAROLD DEW at Canberra, lamentably low, and only a small proportion of the population enjoys perfect health. But it had been realised that education of the people on health matters was essential, and it is for this very purpose that the Commonwealth Council for National Health and Medical Research has been formed. It is worthy of note that this council as part of a campaign for national health recommends grants for research. Well-paid junior research workers are to be appointed for three-year periods, and from them are to be chosen the senior workers for permanent positions. Perhaps in a newer civilisation it is easier to see the way in which the practice of medicine develops. At the official opening of the Institute of Medical Science in Adelaide Sir HENRY NEWLAND traced the three stages. In the first, pioneers received medical service from doctors who migrated with them; there were no means of training students and no teachers. In the second came the birth of the medical school keeping students in touch with scientific progress abroad. In the third stage were provided the means for research in medical science; only when a permanent institute of medical science or research had been established could medicine be said to have really taken root in a young country. The paramount need for research has been endorsed in several of the opening addresses at the London schools of medicine, or in the speeches at old students' gatherings, printed on another page; and Sir KINGSLEY WOOD himself spoke on Tuesday at Liverpool of the whole armoury which modern skill and science has given us. It is well that at the outset of a campaign to ensure that every citizen uses the health services which are available to him medicine should set its face ever more firmly to the discovery of the scientific laws on which those services must be based. In the last resort,

as Lord DAWSON emphasised in our columns on the eve of the campaign, health depends on the individual man—his knowledge, still more his respect for knowledge.

TREATMENT WITH GOLD

IF an example were wanted on which to base an essay on medical empiricism, a very good choice would be the story of chrysotherapy. It began, in the case of tuberculosis, on the strength of a loose analogy between the effects of the metal in vitro and in vivo, and it was later applied to rheumatism, on the ground that rheumatism was also a chronic disease, and regarded by some as tuberculous. No intelligible account of how gold influences either physiological or pathological processes is yet forthcoming, and we are quite ignorant about the pathogenesis of chronic rheumatism. Nevertheless gold appears to have some sort of favourable effect, and the empirical investigator's task is to assess it and define its conditions, by the blindest of trial-and-error procedures. The inherent difficulties of such an investigation, and of its interpretation, should be clear to anyone who reads the paper of Prof. HARTFALL, Dr. GARLAND, and Dr. GOLDIE in our last issue and this. Theirs is the leading inquiry on this subject in England, and this is their third annual report. Its significance is not to be appreciated by reading the concluding summary alone, although that states that gold treatment in their hands has brought about cure or striking improvement in 80 per cent. of 750 cases of rheumatoid arthritis. These patients were treated with one or more of four gold preparations, in standardised dosage, and received no other treatment. Difficult though it is to measure, however roughly, the degree of improvement in a condition like rheumatoid arthritis, it is clear that on the whole a substantial improvement took place, more than might have been expected in the spontaneous behaviour of the disease; a control series of cases followed over the same period would have made the estimate of this improvement more accurate. On the average, benefit is somewhat greater in cases of more recent onset than in those of long standing. Relapse may occur, but is amenable to repetition of the gold treatment. These general conclusions are supported by COPEMAN and TEGNER's observations[1] on 51 cases of rheumatoid arthritis in London and by PARR and SHIPTON's results[2] with 70 cases in Sydney. They accord with French opinion, for the gold treatment originated in France; but the Americans continue to be sceptical, asking for detailed comparisons with control series of untreated cases, and pointing to the toxic reactions with the old question: "Are you sure the game is worth the candle?"

These toxic reactions are indeed numerous, occurring in 35 to 40 per cent. of the Leeds series, 26 per cent. of the Sydney one. The milder ones, like itching skin, sore tongue, and nausea, are of no great moment. More severe skin reactions with erythema and exfoliation, lasting for weeks or months, are a more serious matter, and, like purpura, agranulocytosis, and liver injury, they can be fatal. Prof. HARTFALL and his colleagues attribute at least 7 deaths, in 900 cases, directly to the treatment. It is still quite uncertain whether therapeutic action and toxic action, in a given patient, are different degrees of the same effect, or whether the toxic action is a capricious side-effect unrelated to the therapeutic influence. The Leeds workers have grown tolerant towards all but the most dangerous toxic signs, and press on with their routine courses of gold in spite of them, but they betray their anxiety when they recommend 1 gramme as the maximum amount to be given in a course, although their statistical analysis suggested that doses twice as great were no more toxic. The Australians are satisfied that the smaller dosage is safer, and clearly will not be happy till they lower the incidence of toxic reactions much further. They have some evidence that achlorhydric patients are more prone to reactions than others, that the cold clammy slightly cyanotic type of patient is liable to bleed severely, and that the degree of punctate basophilia may be a guide to the risk of untoward developments. These are clues worth following.

Two years ago[3] we urged that chrysotherapy be thoroughly investigated by experts in large clinics before it is taken up indiscriminately by the profession at large. The work we have referred to shows that more such expert investigation is still necessary, partly because the treatment is so promising, and partly because it has so many drawbacks. Half a dozen experiments on the Leeds scale are necessary in this country, aiming at corroboration of the general value of gold, improvement and individualisation of dosage, and mitigation or prevention of toxic effects. Unfortunately few institutions are so organised that they can readily undertake such a large and important task. We shall probably wait another five years before we know whether gold is a passing fashion or a therapeutic agent of permanent value. Meanwhile an iconoclastic pair of Japanese[4] have just pointed out that the only gold compounds therapeutically active are those which contain sulphur, and in the treatment of experimental tuberculosis in guinea-pigs they find one of these compounds just as effective when the gold is removed from it and the sulphur left in!

POLITICS IN THE HOSPITAL

LAST month the *St. Bartholomew's Hospital Journal* grasped a nettle that has been stinging people at many hospitals besides Bart.'s. Calling attention to the activities of students with socialist sympathies—admittedly for the most part "of the most delicate possible shade of pink"—it condemned them on the ground that the hospital is a scientific institution in which politics have no

[1] Copeman, W. S. C., and Tegner, W., *Lancet*, 1937, **1**, 554.
[2] Parr, L. J. A., and Shipton, E. A., *Med. J. Aust.* June 5th, 1937, p. 864.
[3] *Lancet*, 1935, **2**, 85.
[4] Ken Yanagisawa and Sakae Kawai, *Jap. J. exp. Med.* 1937, **15**, 29.

place. The politics of these students, said the *Journal*, may be all things that are good, but active propaganda can mean only future division and ill will, and the splitting of students into fantastic artificial warring camps. "In this hospital we are many creeds and many races who have, up till now, lived in perfect amity and accord. We have a common interest in our profession and a common pride in our hospital, and have formed a fraternity more genuine and more lasting than is ever likely to be created by our local Lenins. And our personal and political views have seemed to us irrelevant and impertinent to the work in hand." So far the thesis will command sympathy if not agreement; and if, like most of those who grasp nettles, the writer went on to use unnecessary violence, his argument remains reasonable.

Nevertheless the pleas of those who deplore political discussion are always suspect, for they are usually disguised pleas in favour of maintaining a political and social status quo. Among the seven indignant letters of reply published in the October issue of the *Journal* is one from Lord ADDISON, who wisely questions whether "medical studies should be pursued in social blinkers," and suggests that our profession has often been prejudiced because its members have been too self-contained in their work and outlook. One may agree with Lord HORDER (quoted by the editor) that "it is paramount that we remain detached from political clamour, the clamour of Right and Left"; and yet one may still feel that in the present situation of the world it is necessary that young men as well as old ones should be thinking about the state of society and how it can be improved. If they are to think, they should be free to discuss; and the right of association for purposes of discussion is elementary in England. In England, too, it has been shown that political differences of opinion are compatible with friendship and everyday collaboration, and medical students ought to be well enough educated to carry on this valuable tradition—a tradition imperilled, incidentally, wherever criticism is expressed with contempt or lack of understanding.

At the same time the *St. Bartholomew's Hospital Journal* is right in speaking of the sense of unity felt in our hospitals, and this valuable sense of unity would be endangered if the activities of any group of students were evidently directed by an outside body. The existence of socialist, fascist, conservative, pacifist, or militarist societies at the teaching hospitals—however enthusiastic—need cause no apprehension. But their close affiliation with larger organisations has inherent dangers and may well arouse protest. It is hard to draw a line; but the guiding principle, surely, is that our hospitals should be centres for personal discussion of any subject under the sun, but not for centralised party propaganda, whether of Left or Right.

ANNOTATIONS

CHEMICAL PROPHYLAXIS FOR POLIOMYELITIS

SOME two months ago we referred [1] to experiments made in the United States towards preventing the passage of poliomyelitis virus through the olfactory area of the nose to the brain by the local application of coagulating drugs, and especially to the work of Schultz and Peet and their colleagues.[2] They recommended a solution containing 1 per cent. zinc sulphate, 0·5 per cent. sodium chloride, and 1 per cent. of a local anæsthetic called Pontocaine, and they emphasised that ordinary spraying was inefficient and that the olfactory area in man can only be reached by a long fine nozzle passed under inspection between the middle turbinal and the septum. When effectively applied a solution of zinc sulphate causes pain, coryza, and headache, unless it contains a local anæsthetic, but the solution recommended does not seem to produce these effects, although it does cause anosmia for a few weeks.

It is perhaps worth pointing out that this method of prophylaxis is still considered with reserve, both in the United States and in Australia, where there have been epidemics of the disease. An annotation in the *Journal of the American Medical Association* of July 24th says that the use of this technique in the human being has been too variable and uncontrolled to permit even an approximate estimate of its value. In order to obtain adequate information, treatment should at present be conducted only in properly equipped centres and follow-up records should be kept of all patients. The hazard of using a long-tubed atomiser in the vicinity of the cribriform plate is mentioned, together with the possible risk of poisoning by the local anæsthetic. In Australia, likewise, the Infantile Paralysis Committee of New South Wales [3] is of opinion that the general use of nasal spraying should not be advised until the results of further clinical trial are known, and Helms [4] of Sydney remarks that the nasal mucous membrane possesses an innate destructive property which may be damaged by chemical antiseptics. He thinks that as the highest incidence of poliomyelitis recorded in any one year in New South Wales is 14·9 per 100,000 of the population, it is hardly justifiable to recommend the general use of a prophylactic measure which may cause permanent damage to the nasal mucous membrane.

A further trial of the method should certainly be made in a future epidemic, but only in one or more clinics where it is certain that the technique will be properly observed and the results carefully tabulated. Meanwhile Harmon is again questioning the evidence on which we base our belief that poliomyelitis in man is primarily a nasopharyngeal disease.[5]

X RAY KYMOGRAPHY

ON another page of this issue will be found a review of two books on X ray kymography. So far as we can ascertain the method has not been used in this country, although it was one of the many possible developments of radiology in which the late

[1] *Lancet*, July 24th, 1937, p. 203.
[2] Schultz, E. W., and Gebhardt, L. P. *J. Amer. med. Ass.* 1937, **108**, 2182; Peet, M. M., Echols, D. H., and Richter, H. J. *Ibid.* p. 2184.
[3] *Med. J. Aust.* August 21st, 1937, p. 327.
[4] Helms, K., *Ibid*, p. 328.
[5] Harmon, P. H., *J. Amer. med. Ass.* Sept. 25th, 1937, p. 1061.

Robert Knox interested himself. After a long period of adolescence the method now appears to have reached maturity. The technique and purpose of kymography may be briefly set out thus. Between the patient and the film there is placed a sheet of heavy metal having a series of parallel slits about 0·5 mm. wide, separated from one another by spaces of about 12 mm. During the exposure, the film moves uniformly at right angles to the slits through a distance equal to the interval between the slits. A record is thus obtained of the movements of a number of points on the surface of the organ during the exposure. If for instance the heart is examined and the exposure time corresponds to three heart-beats, the outline of the heart shown on the film takes the form of a series of three waves of systole and diastole at each of several roughly equidistant points on the cardiac border. From this film the movement of the heart can by appropriate means be reproduced as in a cinematograph. Stumpf and his associates, not to mention others working independently, having explored its possibilities in all the viscera claim that the form and time-relationship of this movement provides valuable information which cannot be obtained by other means. The method is undoubtedly costly and its practice, we feel, can hardly be as easy as its protagonists make out. The interpretation of results evidently takes much time and requires considerable experience. Clearly the method must remain for some time to come beyond the scope of routine hospital work. On the other hand, as Stumpf rightly points out, movement is life and any method which records movements deserves the fullest investigation. The question to decide is whether the supplementary information which kymography provides is sufficient to justify the expenditure of so much money and time. We hope that some radiological centre in this country having adequate means at its disposal will undertake a thorough and critical investigation of the method.

IRON METABOLISM

THE transport and fate of iron in the body is little understood. Dr. R. A. McCance and Miss E. M. Widdowson [1] have lately studied the metabolism of various substances in a polycythæmic patient treated with acetylphenylhydrazine, and found that less than 0·5 per cent. of the total iron liberated by the destruction of red cells was excreted Moreover only 30 per cent. of the nitrogen, 5 per. cent. of the potassium, and 30 per cent. of the copper from the same source was recovered from the excreta. In explanation of these findings they suggest that the body is unable to excrete iron. "There are," they say,[2] "indications that in man and certain animals the bowel excretes practically no iron. If this is the case, the amount of iron in the body must be regulated by controlled absorption." But the site of storage of liberated iron is not yet clear.

The problem of the transport of iron has been attacked by Drs. Moore, Doan, and Arrowsmith [3] in an investigation of the amounts of plasma iron and "easily split off" iron present in the blood under varying conditions. They conclude that iron is transported as plasma iron, since they have found the quantity of plasma iron to vary significantly and constantly under different conditions. The amount present in peripheral blood is influenced by, and is a measure of, (*a*) the amount of iron being absorbed from the gastro-intestinal tract, (*b*) the extent and adequacy of the iron reserves of the body, (*c*) the ability of the bone-marrow to utilise iron in the synthesis of hæmoglobin, (*d*) the rate of hæmoglobin synthesis, and (*e*) the extent of hæmolysis taking place in the spleen and other tissues. In the iron-deficiency states plasma iron was uniformly low; in conditions of decreased red cell formation—e.g., hypoplastic anæmia and pernicious anæmia in relapse—it tended to be high. When the marrow was unusually active, as after severe hæmorrhage and in remissions of pernicious anæmia, the plasma iron was low. In hæmolytic states it was in equilibrium between the amounts of iron being added to the blood stream as a result of the hæmolytic process and the amount being withdrawn by the active marrow. When this equilibrium was disturbed—by splenectomy, for instance in acholuric jaundice—the plasma iron fell as more hæmoglobin was formed. After the administration of single large doses of iron by mouth the concentration of plasma iron was often found to increase to as much as ten times its basal value. In fact plasma iron behaved exactly as "transport" iron might be expected to behave under various conditions. The "easily split off" iron, on the other hand, was relatively stable, suggesting that it is not concerned in transport; but its physiological function remains to be defined. It is evident that much else concerning iron metabolism remains indefinite; but investigations such as those outlined here are adding to our knowledge.

[1] McCance, R. A., and Widdowson, E. M., *Quart. J. Med.* 1937, **6**, 277.
[2] McCance and Widdowson, *Lancet*, Sept. 18th, 1937, p. 680.
[3] Moore, C. V., Doan, C. A., and Arrowsmith, W. R., *J. clin. Invest.* 1937, **16**, 627.

UNDULANT FEVER IN SWEDEN

THE Lennander Lecture [1]—the subject of which must be some recent scientific problem—was delivered this year before the Swedish Medical Society by Dr. Gunnar Olin, whose choice of subject—the epidemiology and prophylaxis of undulant fever—was the more fitting as he has himself done much original work on this disease. Apparently undulant fever became notifiable in Sweden in 1928, the first case in that country having been demonstrated only about six months earlier. From 1929 to 1936 inclusive, 1121 cases have been notified; the source of infection has invariably been *Brucella abortus*. During the period under review there has been a rise in the number of notifications every year, but the increase from 118 cases in 1929 to 211 cases in 1936 is partly due to the growing alertness of Swedish doctors in the diagnosis. Undulant fever has no special seasonal incidence in Sweden, but it shows a predilection for males, only 36·3 per cent. of a series of 771 cases affecting women. Dr. Olin holds that this sex difference cannot be wholly attributed to the fact that men are likely to handle cases of infectious abortion in cattle, for it applies also to infections traced to the consumption of milk. As for the age of victims, the incidence is as low as 0·9 per 100,000 under the age of 5, rising to 15·2 per 100,000 between the ages of 30 and 39. The comparative immunity enjoyed in early childhood is the more striking because of the high consumption of milk at this age. Dr. Olin's charts of the incidence of undulant fever and contagious abortion in Sweden provide a graphic reminder of their association. Estimates of the frequency with which Swedish cattle are infected with *Br. abortus* vary widely; some serological tests suggested that a third of all the herds are infected, whereas notifications implicate less than a half per cent. of them. Dr. Olin believes his estimate of infection of some 10 per cent. of the

[1] *Hygiea*, 1937, **99**, 401.

country's herds to be conservative. Confirmation of his contention that infection with *Br. abortus* must often run a latent or unrecognised course in human beings is found in skin tests conducted by him with an antigen prepared from the organism. Having invariably obtained a positive skin reaction to this antigen with five persons definitely known to have suffered from undulant fever, he proceeded to apply the test to 288 persons convalescent at the Stockholm Fever Hospital from various infectious diseases such as scarlatina. While the number of positive reactors (21) was 7·3 per cent. of the number tested, town dwellers accounted for 5·2 per cent. (11 out of 211) and country dwellers for 13 per cent. (10 out of 77)—which suggests that the facilities for infection of human beings with *Br. abortus* are greater in the country. The susceptibility of laboratory workers to undulant fever is shown by the experiences at the Swedish State Bacteriological Laboratory in which seven cases have occurred. All the nine laboratory workers who had worked with *Br. abortus* for several years gave a positive skin reaction to a *Br. abortus* antigen, although their serological reactions were negative or doubtful. It seems from Dr. Olin's observations that the skin test may prove to be definitely specific whether a previous infection has been latent or not.

AT THE BEDSIDE

WRITING on the medical progress of the past year Dr. Robert Hutchison [1] admits the advance of knowledge but discerns a tendency to exaggerate the "scientificness" of medicine. This tendency, he says, has three dangers. First, it clutters up the medical curriculum with all sorts of 'ologies, most of which the student forgets as soon as he has passed his examination; secondly, it leads to undue respect for laboratory methods and reports as compared with clinical observation; and thirdly, in Sir Auckland Geddes's words, "many come to the sick-room thinking of themselves as men of science fighting disease and not as healers with a little knowledge helping nature to get a sick man well." Thus Dr. Hutchison believes that the ultra-scientific outlook promotes a wrong attitude towards work at the bedside. The psychologist will agree: much has been said of late (and rightly) about the importance of treating mind as well as body. But our contributor to "Grains and Scruples" last week touched a sore spot for psychologists and scientists alike when he said that all too often the doctor of to-day has no message worth delivering: "having no beliefs of our own we have none to offer our patients." In the long run the bedside manner is an expression of the practitioner's personality, and for purposes of healing this should include courage as well as sympathy, faith as well as knowledge. Dr. I. G. Cameron, in his presidential address to the Malayan Medical Association,[2] referred (as Mr. Eason does on p. 865) to Stevenson's doctor bringing air and cheer into the sick-room, and spoke of the need to make the patient believe himself at the end of each visit "better already." Dr. Cameron is even doubtful whether there is not some telepathic—should it not be telesthenic?—communication between doctor and patient. "We must remember," he concludes, "that we use the power of faith as well as the science of medicine, and, to get our best results, we must instil into our patients, faith in ourselves, and hope in their speedy recovery." Some may recall the recollections of Dr. R. McNair Wilson, contributing to Grains and Scruples a few months ago: "I remember still, after nearly half a century, the sense of ineffable relief and comfort which I experienced at the sight of our family doctor when any member of the family was ill. He was a very small man with an uncompromisingly bald head. But there was a look in his eyes which was worth the contents of a dozen chemists' shops." This is only one of countless pictures of a good kind of bedside manner, and the subject has inspired artists as well as writers. Describing once more Sir Luke Fildes's painting, The Doctor, a contemporary [3] speaks of the patience, the keenness, the dependability and faithfulness it portrays. But the editor does not leave it at that. "It is unfortunate," he continues mournfully, "that modern copies of this famous picture fail to reproduce the original. The lighting from the window has been increased, and the doctor is subordinated to one of a group. The copies are appealing, but it is the portrayal of the drama of the group that appeals, rather than that of the qualities of the physician."

[1] *Practitioner*, October, 1937, p. 313.
[2] *J. Malaya Branch, B.M.A.* 1937, **1**. 1.

THE PATRON SAINTS OF PHARMACY

THE twin brothers Cosmas and Damianus, who flourished in Asia Minor in the third century of the Christian era, were, according to Sir Humphry Rolleston, physicians more miraculous than any modern ones, and, moreover, were the first doctors to treat the sick gratuitously. These brothers are the patron saints of pharmacy, and Sir Humphry had much of interest to say about them when he delivered the inaugural address at the opening of the new session at the School of Pharmacy of the Pharmaceutical Society at Bloomsbury-square on Oct. 6th. Speaking on the historical relations of pharmacy and physic he gave such precise details of the story of these medical twins, as, for instance, that they were both beheaded on Sept. 27th in the year of our Lord 297, for some reason not stated, but possibly because they worked without fees, that it was not surprising to learn that there is some doubt whether Cosmas and Damianus ever actually existed. Their legend may have merely been a Christian version of that of the Dioscuri, the heavenly twins—Castor and Pollux, the sons of Jupiter. If pharmacy is after all bereft of its patron saints, it has a father in Dioscorides, a surgeon in the Greek army who flourished about A.D. 50 and earned his title because in the course of his campaigns he made a collection of 400 medicinal plants. Sir Humphry took his listeners through the ages, showing the difficulties with which their forbears had contended and sometimes overcome, and left the impression that the pharmacist of to-day is better off than his predecessors.

THE VITAMIN CONTENT OF VARIOUS FOODS

MANY nations are now engaged in making surveys of the diets actually eaten in various income groups of their population. When this has been done the next step is to work out the composition of these diets in calories, proximate principles, minerals, and vitamins, in order to ascertain the amount of each consumed. For this purpose the composition of the foodstuffs making up the various diets must be accessible in tabular form. E. P. Daniel and H. E. Munsell,[4] nutrition chemists working in the bureau

[3] *New Engl. J. Med.* Sept. 16th, 1937, p. 494.
[4] A summary of the chemistry of vitamins, units of measurement, quantitative aspects in human nutrition, and occurrence in foods. Miscellaneous Publication, U.S. Dept. Agric., No. 275. Washington, D.C. Obtainable from the Superintendent of Documents, Washington, D.C. 1937. Pp. 176. 15 cents.

of home economics of the United States Department of Agriculture, have attempted to supply this need as regards the vitamin content of foods. They have made an exhaustive search of the relevant literature and have set out the detailed results, with the references, in one large table for the vitamins A, B (B_1), G (B_2), C, and D. The main conclusions are conveniently summarised in a much shorter table. The values for the vitamins are expressed in international units, Sherman units, and American Drug Manufacturers' Association units. In an introductory section factors are given for converting the two last into the first; but Daniel and Munsell explain that this is not a safe or desirable procedure, since it gives to values expressed in the variable biological units of animal response a definite and absolute value which they do not actually possess. Certainly this pamphlet is the fullest and best of the sort that we have seen and must have involved enormous labour. It seems almost ungrateful to suggest that it would have been better to tabulate only those foods of which the vitamin content has been estimated by a satisfactory method in international units, and thus to recognise that these values have a rank and reliability of an altogether different order from the rest. The data supplied would have been very much less in quantity, but the method actually adopted carries a considerable risk that the vitamin values for diets worked out on the basis of biological units may prove to be discrepant, and require much subsequent revision. The pamphlet also includes a table of the ascorbic acid content of foodstuffs worked out by chemical titration, and in the introduction guidance is given on the proper way to use international standards in making biological estimation of the vitamin content of foodstuffs.

DEAF MOTORISTS

THE question of the deaf motorist has lately been ventilated in the correspondence columns of the *Times*. Discussion began when the mayor of Eastbourne was reported (August 17th) to have said that "in view of the number of fatal accidents there seemed a flaw in the law which allowed a man with such a disability to hold a licence"—the disability being that the man was stone-deaf. Thereupon Mr. Leslie Edwards, honorary secretary-treasurer of the British Deaf and Dumb Association, replied that his association has the names and records of a large number of stone-deaf motor drivers which would convince anyone that they are among the safest and most careful drivers on the roads, for the simple reason that they drive entirely by sight, and he claimed that their sense of sight is developed by necessity to an extraordinary degree of efficiency; they are also free from the distraction caused by conversation among their passengers. How far this is true could only be proved or disproved by complete statistics, having regard to the proportion of stone-deaf drivers on the roads, and these would be very hard to obtain, but Mr. Edwards's arguments are not unreasonable. He does not intend them to apply to persons who are only partially deaf and who may continue to rely on the remnant of hearing they still possess. It is strange, he thinks, that many insurance companies accept for motor risks such people with defective hearing, while they refuse to consider totally deaf applicants. This brings a reply from Mr. Frederick Williams, director of an insurance association, to the effect that the cost of claims against a stone-deaf motorist is higher because magistrates and juries do not believe him to be a perfectly safe and competent driver; hence underwriters, as business men, are compelled to raise the cost of his insurance. It would be interesting to know whether, as a fact, increased claims are made and sustained against stone-deaf drivers when involved in an accident, and whether enough claims have been made in these circumstances to provide material for a decision.

THE VENAL DOCTOR

IN their hilarious tale of "The Wrong Box" Stevenson and Lloyd Osbourne placed in the mouth of Morris Finsbury a cheerful denigration of medical integrity. Venal doctors, said Morris, were as common as blackberries; you could pick 'em up for three pound ten a head. In the same vein of badinage Mr. A. Smith, a Barnsley solicitor engaged in defending a motorist on a charge of driving while under the influence of drink, has exposed afresh the fallibility of the doctor in the witness-box. It would be a wicked day for England, said Mr. Smith, if, on the unsupported evidence of a doctor, however well qualified, a man's defence were taken completely away from him. "I say fearlessly," continued Mr. Smith, "that, as a class, especially when they come into the witness-box, there are no more unreliable people than professional medical men." "We all suffer from it," he added. "Six medical practitioners in this town found carbon monoxide poison eight days after a man's death; yet the most learned authority in the country came to Barnsley and said that, after a body had been saturated in carbon monoxide, there could be no trace of it six hours afterwards." The magistrates, it seems, although the carbon monoxide had been drawn across the trail, were unimpressed by Mr. Smith's fearless outburst. They even registered disagreement with his remarks. The medical practitioners of Barnsley also, taking Mr. Smith almost too seriously, rallied to repel this new attack upon the citadel and passed a resolution of regret that a member of the legal profession should abuse his position as an advocate by making for his own purposes a general charge against the medical profession on an occasion and in a place where a reply was impossible. There the matter rests; yet Mr. Smith should have credit for his fearlessness. When defending a client, a solicitor must say something. If he has nothing very sensible to say, he must fall back on something less sensible. Most doctors would sooner go anywhere than into a court of law. If Mr. Smith's words induce his fellow-solicitors never again to ask a doctor to enter the witness-box, his revelation will not have been in vain.

RHEUMATISM RESEARCH CENTRES

A RESEARCH laboratory and special ward for investigating the causes of rheumatism are to be set up at the Hospital of St. John and St. Elizabeth, London, the foundation-stone being laid on Nov. 10th by the Minister of Health. This was announced by Lord Horder, chairman of the British Empire Rheumatism Council, in a statement to its members after its first year's work. The British Red Cross outpatient clinic in Peto-place will coöperate with these research departments and another to be established at the St. John Clinic, Pimlico. A gift of £13,000 made by Mr. Alexander Maclean will be at the disposal of the workers for seven years. In Aberdeen the formation of a similar centre has been considered since last November when Prof. Stanley Davidson proposed that the city should take the lead in Scotland. His suggestions were later supported at a

branch meeting of the British Medical Association, when Dr. W. S. C. Copeman, out-lined the essentials for an effective unit. A report by Dr. H. J. Rae, medical officer of health for Aberdeen, recommending the provision of facilities for diagnosis and early treatment was considered on Sept. 8th by the public health committee, who decided that a separate clinic was at present impracticable but suggested that special baths with contrast sprays and paraffin-wax, peat, and mudpack baths should be incorporated in the new uptown baths. The town council, however, decided on Sept. 21st to consider further the establishment of a clinic and to proceed at once with part of the scheme.

CHINA

OUR correspondence columns contain an appeal for medical aid for China—an appeal that will bring instant response. Newspaper reports state that in order of urgency the supplies needed are chloroform, ether, iodine, local anæsthetics, catgut, cotton-wool, and gauze; but there is already a shortage of all kinds of medical equipment. Among the first gifts received is a ton of chloroform, with 100 gross of bandages and a quantity of iodine—all from a single donor anxious to help the work of missionaries of the Presbyterian Church of England. But apart from the wounded, both military and civil, there are refugees in their hundreds of thousands; and as we have lately pointed out, their plight carries a threat of epidemics as well as destitution. Last week Lord Cranborne, as British representative at Geneva, proposed that the League should vote a substantial sum for the prevention and cure of plague, typhoid, and cholera; expenditure of £100,000 has already been authorised, and though details are not yet available it is clear that the Health Organisation is going to send substantial help, both in material and personnel. The League has for many years provided medical advisers for the Chinese Government, and it will no doubt prove possible to expand the health department to which Dr. Borçiç is at present attached. The task of caring for refugees—and perhaps feeding them—would require action on a larger scale

"Q FEVER"

THAT the "coastal fever" of Queensland is a composite disease has been evident for many years, and a number of definite clinical entities have gradually been separated from the rest. Derrick [1] of Brisbane has now succeeded in differentiating one which he has termed "Q fever" and which appears to be a new disease. His attention was first drawn to it by 20 cases of obscure pyrexia among meat-workers between 1933 and 1935, in whom blood cultures and agglutination tests failed to establish a diagnosis. He was later able to investigate in detail 9 similar cases in men aged 17–55, of whom 5 were meat-workers, 2 dairy farmers, and 2 labourers. The epidemiology was obscure, for there was no obvious relation between the cases. It is probable that some blood-sucking vector is responsible for its natural transference, and that there is a reservoir of infection in some animal, though this has not yet been identified. After an incubation period of 15 days or less the onset of the disease was acute, with malaise, anorexia, shivers or an actual rigor, severe headache, pains in the back and limbs, and rapid rise of temperature to 102°–104° F. In 4 patients the fever ran a short course, subsiding rapidly in 6–9 days; in 4 others gradually in 14–21 days, though in one case evening pyrexia was still present in the 9th week. Daily remissions were usual and the pulse-rate remained relatively low. Violent headache was the outstanding symptom throughout, and the more severe cases became drowsy and stuporose and entered a definite typhoid state before recovering. Two men showed a few indefinite red spots on their abdomens and one a punctate rash. Conjunctival congestion with photophobia occurred at the onset in 2 cases, and 3 of the 4 whose blood was examined showed a moderate lymphocytosis and one a mild anæmia. The most severe case became jaundiced on the 13th day and remained so until the 30th, resembling a case of Weil's disease except for the absence of leptospira. The spleen was not palpable in any of these patients, although it had been so in 5 of the 20 earlier cases and was invariably enlarged in experimentally infected guinea-pigs and mice. Constipation was usual, and occasionally there was vomiting, abdominal distension, cough, and epistaxis.

Clinically, therefore, Q fever resembles influenza, typhoid and paratyphoid fevers, typhus, and leptospirosis. The diagnosis is suggested by mild or absent respiratory symptoms, with no diarrhœa or typical rash and with negative Weil Felix and other specific reactions. It was found that guinea-pigs could easily be infected with the disease by inoculating them with blood or urine from a human case, or with blood or organ emulsion from another infected laboratory animal. In these the incubation period averaged 10 days, and the febrile stage 4–6 days, without any very definite symptoms. It was found that in guinea-pigs an attack conferred immunity for at least six months, and this fact was made the basis of a diagnostic test. On inoculating the blood or urine of each of the nine patients into a guinea-pig, there was a characteristic febrile reaction, which was absent in immune animals. The results were always positive when made with blood in the febrile period, but the urine only in the later stages. The practical value of the test is limited by its taking 2–4 weeks to carry out. It has been found possible to maintain the virus by passage in guinea-pigs for a year without apparent effect upon its virulence, and to preserve it in a refrigerator for a month or more. Burnet and Freeman,[2] working with virus from Derrick's cases, have been able to show that in all probability it is a rickettsia body. Those found in sections and smears from the livers and spleens of infected mice varied from well-marked rods about 1·0 μ by 0·3 μ to coccoid forms indistinguishable from those seen in psittacosis; the morphology was characteristic—closely packed intracellular microcolonies with sharply circumscribed oval or circular outlines. The specificity of this organism was supported by the fact that serum taken from a Q fever patient on his 12th and 20th days showed an increase in agglutination titre for rickettsial emulsion from 1 in 4 to 1 in 200 during this period. On the other hand, convalescent sera from guinea-pigs and a monkey gave no agglutination of *Bacterium proteus X19* or *XK*, which suggests that the rickettsiæ are distinct from those known to be pathogenic in man.

There is clearly a close resemblance between Q fever and typhus. The course of the fever in human beings and the febrile and immunological responses of guinea-pigs are generally similar, and the presence of rickettsia bodies is common to both. Guinea-pigs, however, appear to be very much more susceptible to Q fever than to typhus, and they do not show any scrotal reaction when infected with the

[1] Derrick, E. H., *Med. J. Aust.* 1937, **8**, 281.

[2] Burnet, F. M., and Freeman, M., *Ibid*, p. 299.

former. The main differences lie in the absence in Q fever of a positive Weil-Felix reaction and of a typical rash, and in the very characteristic morphology of the rickettsia bodies.

SMOKELESS ZONES

As a first experiment in making the use of smokeless fuel in towns compulsory, even in the non-industrial districts, Mr. Charles Gandy, chairman of the National Smoke Abatement Society, proposed at the annual conference that there should be a concentrated effort to obtain zones where the emission of smoke would be a statutory offence. The central areas of a city would be the most suitable because the modern offices and flats there, while contributing nothing to the nuisance themselves, would speedily protest against careless neighbours. These parts also could better afford the additional expense of the restrictions—small though they are when compared with the high rates and rents—and the older type of house is rapidly disappearing under slum-clearance schemes. The replanning of such an area should include parks and gardens, which would be much more likely to thrive if freed from the present heavy palls of soot. To the objections that soot need not settle near its source and that compulsion is always unpopular Mr. Gandy replied that the heavier and thus more damaging smoke tends to have a limited range in all but stormy weather and that some interference with liberty is essential in all town planning; the householder is free, he said in effect, to use what fuel and fire he chooses, only so long as he keeps the products of combustion to his own property. Smoke abatement propaganda has been broadcast long enough for public opinion to have become apathetic, and it needs a renewed and vigorous lead. The increase in light and cleanliness in the smokeless zones might well provoke neighbouring unregenerate districts to emulation.

COUNTY HOMES FOR CANCER

An appeal is being made to Yorkshiremen to provide funds to establish a home for cancer patients in their county, which is described as having "the third highest aggregate deaths from cancer in England and Wales." The appeal, which is made by County Homes for Cancer (19, Berkeley-street, London, W.1), had an initial success in securing the gift of £1000 from Mrs. Shaw, of Huby, who has been impressed by the need. The *Leeds Mercury* quotes her as saying:

> "There is nowhere at present where cancer patients can be kept any length of time. They are, perhaps necessarily, soon sent back to their homes. In our own cottage hospital we could not take cancer patients, for other patients objected. There seemed nowhere for them to go.
>
> "We do not in any way wish to interfere with existing schemes. Our hope is to try out the idea in a small home which would not attempt to cater for the whole of Yorkshire. If it works, and makes even a small contribution to the attack on the disease, it would be well worth while."

The scheme has nevertheless found its critics. At a public meeting in York at which the Earl of Feversham presided, Mr. H. Collinson, F.R.C.S., chairman of the radium committee of Leeds General Infirmary, said he felt that money could be more usefully spent on the provision of beds associated with centres where the treatment of cancer was already being carried out; for scientific treatment requires laboratories, a trained staff, and other adjuncts. In a letter to the *Yorkshire Post* of Sept. 23rd he expressed doubt whether it would be possible for the proposed home to fulfil its undertaking to provide "every treatment of promise known to the present day Art of Healing," and mentioned that the initial cost of X ray apparatus and radium at present in use at the Leeds General Infirmary was about £40,000, and that £3000 a year is spent on its use. To this Miss E. Maule, secretary of the movement, replied (according to the *Yorkshire Evening News*) that "radium is at the present a rather untried proposition and a very questionable business. Regarding Mr. Collinson's statement that our aims will entail huge expense, I can say that the places we intend to establish in Yorkshire will not cost more than £3000 for the buildings alone. Proper facilities such as air control and sanitation would be of the very latest. Let me say this," she added, "that a handful of patients we have already treated with injections have shown absolutely successful results."

The humanitarian objects of County Homes for Cancer have attracted an impressive group of supporters, and the organisation is under the presidency of Lord Rennell of Rodd. The medical vice-presidents are Dr. E. G. Annis, Sir Bruce Bruce-Porter, Dr. Elizabeth Sloan Chesser, and Dr. I. V. Rees Roberts. For the past few years Dr. Annis has been engaged in cancer work as hon. medical officer of the Cancer Control Clinics, which are associated with the Lord Wakefield Cancer Diagnosis and Research Laboratories at Worthing. Treatment with "injections" is used at these clinics, but satisfactory evidence of its value has not yet been presented.

We regret to announce the death on Oct. 6th of Sir John Thomson-Walker, consulting urologist to King's College Hospital.

We also have to announce the death in Belfast on Oct. 4th of Dr. William St. Clair Symmers, who occupied the Musgrave chair of pathology in Queen's University from 1904 to 1930, and was earlier in his life professor of bacteriology and pathology at the Cairo school of medicine in Cairo.

The Minister of Health has appointed Mr. E. Clement Davies, K.C., and Dr. F. J. H. Coutts to a committee to inquire into the arrangements for the prevention, treatment, and after-care of tuberculosis in Wales. Mr. D. J. Wildgoose of the Ministry of Health will be secretary of the committee and Mr. Davies its chairman. The committee is specially being asked whether the scheme for the third grant period made under the Act of 1929 should be amended in view of its high cost.

At a children's party at the Mansion House Queen Mary received purses amounting to about £58,000 on behalf of the Hospital for Sick Children, Great Ormond-street. A cheque for £50,000 for the hospital was afterwards handed to her by the Lord Mayor from Lord Nuffield. It has been also announced that Lord Nuffield has given £15,000 to the Princess Elizabeth Orthopædic Hospital, Exeter, for extension and research work, and he has offered a further £10,000 to the hospital upon certain conditions.

At a special meeting of the council of the British Medical Association held on Sept. 22nd proposals were considered for organising public opinion on behalf of the Association and more generally for improving the relations of the public with the medical profession. It was decided to have a public relations officer, and Mr. A. W. Haslett, lately science correspondent of the *Morning Post*, has now been appointed. A campaign of propaganda is to be initiated and the first of a series of press announcements has already appeared on the instruction of the Association.

OPENING OF THE MEDICAL SCHOOLS

DURING the past week four of the London medical schools have begun their new year with an inaugural address delivered by a visitor. Below we publish extracts from what was said to the students by Mr. Eason at the Royal Free, by Dr. Halliday at St. George's, by Sir Seymour Hicks at Westminster, and by Sir Alfred Webb-Johnson at King's College Hospital.

TEMPTATIONS AND PRIVILEGES OF MEDICINE

BY H. L. EASON, C.B., C.M.G., M.S., F.R.C.S.
PRINCIPAL OF THE UNIVERSITY OF LONDON

YOU are going to join an honourable and trusted profession, but one that has many temptations and few privileges. Keep therefore always before your minds an ideal of conduct and a lively care for the integrity of your professional life. I should urge you that all through your career you should keep in mind that noble preface to Robert Louis Stevenson's volume of poems called "Underwoods":—

> There are men and classes of men that stand above the common herd: the soldier, the sailor and the shepherd not infrequently; the artist rarely; rarelier still, the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilisation; and when that stage of man is done with, and only remembered to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practise an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, Heraclean cheerfulness and courage. So it is that he brings air and cheer into the sickroom, and often enough, though not so often as he wishes, brings healing.

Of the great majority of the medical profession I am convinced from years of experience that these words are true. But in medicine, as in all other professions, there is a small minority with no principles, who by their actions bring discredit on their professions out of all proportion to their number and lead the public to think that they represent the common code of honour among us.

In a recent novel which has sold by the hundred thousand, such a group of, happily fictitious, practitioners in the West End have been pilloried, and what has been written about them in a portion of that novel has overshadowed in the public notice the finer side of the profession which is displayed in the greater part of the book. I personally think the medical profession and the public owe a debt of gratitude to the author of that novel for having disclosed to the public how the science and art of medicine may be and is on occasion prostituted for gain.

In medicine as in every other profession the temptation is money. I have always felt that if the question of payment could be left out of our practice we should all be in a happier and more independent position. I personally have throughout my professional career been more at ease in my hospital out-patient department, where money payments do not come into the picture, than I have been in private practice. It is quite true that the labourer is worthy of his hire, and surely the man or woman who by skill and care saves life or relieves suffering is entitled to the reward of his skill. But to those doctors whose moral fibre is not of the strongest, the temptation to make money warps their conscience. To get rich quickly and to make easy money out of the fear and apprehension of your patients is the most insidious temptation that you will have to meet. To keep the narrow path between undercharging and undercutting on the one hand and, on the other hand, bleeding by excessive fees those who are in terror or in pain is no easy matter.

Another problem in medicine is specialisation with its advantages and disadvantages. The good general practitioner has the widest outlook and the least prejudice. Seeing his patients year in, year out, their father confessor in many matters other than those purely professional, he realises that he is dealing with human beings and not merely with cases; he sees disease in its earliest stages and he also sees the progress of his patients through the hands of specialists and consultants, and can, better than anyone, keep an unbiased outlook on false claims and true, between successful and unsuccessful treatment, and between professional honesty and dishonesty. The patient who has an honest general practitioner and who trusts him is the most fortunate of all and is the best served. But as he cannot be expert in all branches of medicine and surgery, the public demands the services of specialists and specialists there must be. Specialisation has its advantages from the point of view of expert technique and special experience, but it has its dangers in the shape of a narrowed outlook. Unless a specialist keeps his mind well open to the broader aspects of medicine and surgery, he will inevitably tend to look at all disease from the point of view of his own specialty. More than all others the specialist in a particular method of treatment needs to be honest with himself and sceptical of his own treatment. Unless he is, he tends to think his particular method of treatment the panacea for all ills and inevitably approaches the mental attitude of the quack.

And the mention of quackery leads me on to say a few words on that difficult subject. The public has always a great belief in the unqualified practitioner, and in medicine as in sport prefers the amateur to the professional. The unqualified practitioner is usually endowed with unlimited self-assurance, with an enthusiasm untrammelled by a scientific training, and with the personality of a hypnotist. He is free to advertise, and his failures seldom come to light owing to the natural hesitation on the part of the patient to disclose that he has consulted one with disastrous results. It has been truly said that the public judges the doctor only by his failures and the unqualified practitioner only by his successes.

It is noteworthy that the unqualified practitioner gets his living principally from two classes of society, the highest and the lowest. The idle and ignorant rich frequent the osteopath, the chiropractor, and other miracle mongers, and the ignorant poor patronise the herbalist. In between them the solid business and professional classes trust their doctor as they trust their lawyer, their stockbroker, or their other professional advisers.

It is true that from time to time unqualified persons evolve methods of treatment that are subsequently taken up by the medical profession, but these, so to speak, unofficial discoveries are not peculiar to the profession of medicine. The amateur has often made discoveries in other branches of science and knowledge,

discoveries not foreseen by the trained scientist, but this fact is not necessarily derogatory to the profession. May I, however, advise you that throughout your professional career you should keep your eyes and ears and especially your mind open to any new trend of thought or method of treatment, however unorthodox its source. Try it out fairly and, if, after due inquiry, you find it sound, make use of it.

And this consideration leads me on to the question of the association of qualified and unqualified practitioners in medicine, in relation to which the body to which I have the honour to belong—viz., the General Medical Council—comes in for many hard knocks from a portion of the lay press. May I remind you that the General Medical Council (habitually confused by the press and the public with the British Medical Association) was established for the protection of the public and not for the protection of the profession of medicine. As you know, anyone can practise medicine or surgery. Under the provisions of the Dentists and the Midwives Acts it is illegal for any unregistered person to practise dentistry or midwifery, but there is no such embargo on the practice of medicine or surgery. The function of the General Medical Council is set out in the preamble to the Medical Act of 1854, one of the shortest preambles to any Act of Parliament:—

> Whereas it is expedient that persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners. . . .

This is the function and duty of the General Medical Council. In the performance of that duty it follows, and it is laid down in the Act, that the Council shall take all necessary steps to ensure that all registered practitioners receive an adequate scientific and professional training, and that no person shall be permitted to remain on the Medical Register who is a discredit to his profession or a danger to the public. Now it is quite clear that if a registered practitioner assists or covers an unqualified practitioner in the treatment of a patient he is defeating the purpose of the Act, and it is for this reason that the General Medical Council has taken disciplinary action in cases where a registered practitioner has so assisted or covered an unregistered practitioner.

But there is no reason why a registered practitioner should not call in an unqualified person to undertake such treatment *under his direction* as the practitioner may think fit in the interest of the patient. Registered medical practitioners are constantly calling in lay persons such as masseurs, electrical practitioners, and others to give treatment to their patients. There is no reason why they should not call in any unqualified person to assist them. But the patient must be under the care and responsibility of the medical practitioner and the treatment so given must be given under his direction; he must not, however, assist the unqualified practitioner in the treatment of *his* patients.

The disciplinary duties of the General Medical Council which together with the verdicts are often the subject of much criticism are laid down in the same Act, from which you will see that the Council can only pronounce one verdict, guilty or not guilty, of infamous conduct in a professional sense; and can only pass one sentence—viz., erasure from the Medical Register. The definition of what constitutes infamous conduct in a professional sense has been laid down, not by the Council itself but by the Court of Appeal. In the case of Allinson *v.* the General Medical Council, Lord Esher, the Master of the Rolls, defined infamous conduct in the following terms:—

> "If a medical man, in the pursuit of his profession, has done something with regard to it which will reasonably be regarded as disgraceful or dishonourable by his professional brethren of good repute and competency, then it is open to the General Medical Council, if that be shown, to say that he has been guilty of infamous conduct in a professional sense."

It is with this legal definition before them that the Council decides on all cases.

For the guidance of the doctor the Council issues to all practitioners a warning notice setting out various practices which may bring a practitioner before the Council. I should advise you all to read their warning notices very carefully, and to remember that they are not exhaustive but are merely drafted from the experience of actual cases brought before the Council. The warning notices prescribe rules of conduct which are not peculiar to the practice of medicine but are common to all the learned and self-respecting professions. Advertisement, self-adulation in the public press, canvassing and other practices are not permitted in the profession of medicine; and if you feel that you cannot be bound by such restrictions you should choose some other profession.

To my mind there is no sadder sight than the scene in the General Medical Council when a practitioner is struck off the register and expelled from an honourable profession; and sad as this may be in the case of a man, it is a far sadder sight when a woman is removed from the register. One's instinctive feeling is that women's ideals in these matters are higher than men's. As far as I remember only two women have been struck off the register in recent years, and both of these were removed subsequent to their conviction in a criminal court for the performance of illegal operations. Whatever your personal opinion may be as to the propriety or impropriety of operations for abortion, remember that according to the law of England it is a felony; and the Council has practically no option but to remove from the register a person convicted of a felony.

* * * *

From the general tenour of what I have said hitherto you will see that the advantages, other than the honour, of belonging to the profession of medicine are few and the restrictions many. If you feel that your moral fibre is not equal to that strain, give up medicine.

Finally, never become callous but always remember that you are dealing with patients who are in suffering or mortal fear and with relatives who are often in a state of acute anxiety and distress.

In your life-long struggle with death you will want all your energy, all your knowledge, all your womanly sympathy and understanding.

WHAT SHOULD THE DOCTOR BE TAUGHT?

By W. R. Halliday, LL.D.
PRINCIPAL OF KING'S COLLEGE, LONDON

If there is room in the world for all sorts of patients, there is also room in the profession for different sorts of doctors. Can one think, for instance, of two more different men in the higher walks of medicine than William and John Hunter? William, the fashionable accoucheur, an eloquent orator and a social success; John, incomparably the greater original genius, difficult, rather farouche, and tongue-tied to such an extent that before giving his lectures he required to fortify himself with a draught of laudanum.

Further, we must agree with Aristotle that there are other qualities than those which can be tested in the examination hall which are necessary to the application of medical knowledge, and it is common experience that in some branches of the profession one who has been by no means a brilliant student may prove to be a better practitioner than his fellow who has been more successful in academic tests. I mention this because I can't help thinking that we academic people are sometimes liable to forget it and to confuse in our minds the minimum standard of knowledge required for a licence to practise (as a prospective patient I can assure you I am not anxious to see that standard unduly lowered) and, what is quite different, a hall-mark of scientific proficiency and promise. There is work for general practitioners as well as specialists.

And that brings me to the vexed question of what doctors should be taught. The amount of literature which I have had to read in the form of reports on the medical curriculum during the past few years is itself evidence of how acute the difficulty is. I am not, of course, qualified to express any opinion on technical matters, but the problem is one which arises from conditions which are common to the arts and sciences to-day. The fact is that in all fields of study specialist knowledge has advanced so rapidly in diverging directions that there is increasing pressure to cram more and more subjects into the curriculum. There are only twenty-four hours in the day and a quart of milk cannot be got into a pint pot. But these specialist enthusiasts are terribly single-minded fellows. As long ago as the eighteen thirties Peter Latham wrote: "Many a great chemist, a great botanist or a great master of analysis, may be found to contend that what he has to teach is indispensable to the medical student; that the principles of his science are at the root of all rational practice. But beware of great authorities. They have a tyrannous way with them."

In those days the specialties of the clinical period of study had not developed their modern complexity and multiplicity. Then, of course, it was not unusual for a doctor to have taken his degrees in the humanities before he came to the study of medicine, and this kind of education produced a very fine type. It gave a good training to the mind before the professional studies were begun and it also, I think, produced a type which was especially qualified to keep the medical profession in intimate touch with the world of laymen. But whether we deplore it or not, that kind of medical education has gone for good. "Life is short and the art is long." The art is growing longer and longer and we live, I speak here with the feeling of a parent, in less easy economic circumstance.

The basis of the modern medical education is now scientific. You must start with the elementary zoology, botany, physics, and chemistry. The theory, of course, is that the doctor to be is to get an idea of the principles of these sciences. I don't suppose that anyone is so optimistic as to suppose that passing an examination at the Intermediate or Higher School Certificate standard in these subjects qualifies anyone to be much of a scientist. As a result there is one school of thought which is working in the direction of teaching these subjects as chemistry, botany, zoology, and physics specially adapted to the brains and requirements of medical students. That I venture to think is wrong and I should like these elements of science to be kept quite disinterested. I think it important that the future medico should get a glimmering of what these sciences are about irrespective of the art of healing, and it is very important if he is later going to be a specialist in certain lines that he should have sufficient general grounding to be able to resume and to carry further his studies in the relevant science. I cannot help suspecting, for example, that the therapeutic use of radium would have made a progress more rapid and in a much more certain direction had there been a larger sufficiency of experimenters who had or had been in a position to gain a real knowledge of physics.

Anatomy and physiology present no problem, for quite obviously any doctor must be adequately equipped with them. And then you come to the 3rd M.B. and the multiplication of specialties and, may I add, the complexity and manifold character of modern mechanical inventions. Is the prospective general practitioner to be expected to master every possible method of treatment in the time? That is the problem which sooner or later has got to be faced; for as medical science advances and the specialists add to our knowledge, the subjects will multiply still further. The course, like the art, is already long, and to add another year to the medical curriculum is surely not a practical proposition. On the other hand, to try to teach too many subjects in a given time is to have them all imperfectly mastered. It is not really a good plan to set up a standard which involves knowing less and less about more and more. Luckily for me, I am absolved by my ignorance from giving specific advice, but I am sure that some at least of this audience will consider with sympathy the view that there is a real danger of the medical curriculum for the ordinary student becoming overloaded.

It may perhaps occur to some of you that I have been speaking as though the sole object of a hospital medical school was to turn out general practitioners. Of course that is not the case and, in fact, a medical school in which the advance of specialist knowledge is not being steadfastly and enthusiastically pursued will not be likely even to turn out good general practitioners. For though he may not be himself a researcher, every doctor nowadays must know what research is about, and indeed the indirect and impalpable stimulus of living in the atmosphere of a school in which knowledge is being advanced is a far more potent educational influence on the ordinary man than is often realised. In this connexion I do hope that in your new plans the medical school will receive a generous share of space and laboratory equipment. It is common knowledge that benefactors' hearts are more easily touched and their purses more readily unlocked for general hospital purposes than for medical education. And yet surely to turn out good doctors and to advance medical knowledge in the long run does just as much to relieve human suffering as the maintenance of the wards. As a member of the university court I had the pleasure of visiting your present premises not long ago and so I know something of the difficulties which now hamper the scientific work of the school. I profoundly hope that your rebuilding scheme will enable you to give medical research in this ancient and famous home of medical learning the fair chance of adequate equipment.

It only remains for me to say what pleasure it has given me as principal of King's to be here this afternoon. I hope very much that the close friendship and coöperation which happily prevails between the College and the four hospital medical schools with which it is associated, will grow yet stronger in the future. Both amity and policy commend such a

development. Policy because if we can learn to speak with a single voice, our group constitutes the largest medical school in London and should exert a proportionate influence.

THE DOCTOR THROUGH THE PATIENT'S EYES

By Sir Seymour Hicks

In the year 1878 I sat in Sir William Jenner's room and heard that great man inform my parents that my sister was blind and would never see again; and during the fifty years and more which have passed since it has been my privilege and honour to have the friendship of distinguished people like Sir Frederick Treves, Sir John Bland-Sutton, and many others, who have been very good to me. Therefore my days may be said to span from Jenner to Westminster, and so I am not such a stranger among you after all. In the years to come I hope you, too, will honour me with your friendship.

I have had many pleasant illnesses myself, but I will not go into them now except to say that I did have appendicitis thirty-nine years ago, when it was on the danger-list. The operation took 2 hours 20 minutes then. They gave me nothing to drink for five days, and I bribed the nurse to let me have a little water on the third day. She said "If you will give me your word of honour not to drink it," and I said "Yes." I did not drink it; it would have been difficult to do so. Next morning when I woke up I saw the flags at half-mast, and I said "What is the matter? I am alive," and I was told "Queen Victoria died last night."

During the war I was in France and had double pneumonia and was unconscious nine days. Coming back on the hospital ship, on the sixth day a marine came and said "Are you all right?" and added "A torpedo has just missed us by three yards," and then I went off for three days more. Arriving at hospital, the nurse said to me "I am sorry to tell you Lord So-and-So is dead in the next room." I expressed my regret and asked what he died of, and the reply was "The same complaint as you have got." Then I went off for another three days. Throughout my life I have had more kindnesses from nurses than I can tell you, and I look upon them, as I am sure you do, not only as angels in disguise but as some of the greatest women who live in this country. I also have great respect for the amateur nurses who served during the war, even the titled ladies who spent a great deal of their time sitting on the beds of officers and holding their hands.

My address is on "The Doctor Through the Patient's Eyes" because that is the only way I can speak to you about anything. It is the point of view I hold in common with thousands in London and Great Britain. We all know it, but I will jog your memories.

I want you to know that we look upon your profession as a very sacred one; we place you on a pedestal and on it we look up to you, and from which I hope you will never descend. I have never seen a medical friend of mine intoxicated, and I say that for the reason that I want to impress upon you young gentlemen that however festive a gathering at which you are present you should never do anything which would cease to make you an example to the company to which ordinary laymen belong. One is so apt to lose faith over a thing like that. I add to it that I hope you will never tell a questionable story or allow anyone to tell you one. I leave it at that.

One thing which I will say you may think frightfully odd: we do love your uniform. You may ask "What is that?" I mean your black coat. It is as much a part of you as the cassock is to the priest. Let me remind you that it is to you our frightened eyes turn when the time arrives when, as John Bright once said, "I hear the wings of the angel of death fluttering against this house." We feel that the church and the hospital are twin sisters, which we have named Help and Hope. They are as far apart from art and commerce as are the poles; but remember, you young gentlemen, that you are to us an ideal, and as sentinels you stand when we are trembling on the threshold of another world.

I have been told by many physicians that they try to assess their patients as they walk towards their table in their consulting-room; and I would remind you that we patients repay the compliment when we sit down there a couple of minutes afterwards. When we come to you we are all very frightened. We gain our very scanty medical knowledge from quack advertisements and somewhat alarming books with such titles as "Everybody's Doctor." It is the duty of you who embark on this wonderful profession to eliminate fear. It is fear which opens for us the door of your consulting-room. A small number of patients may be callous, or appear so, but most are concealing, or attempting to conceal, fear. You cannot imagine what a tremendous thing it is to find your doctor creating for you a cheerful atmosphere, when he says "Sit down, my dear fellow, and tell me all about it." You say to yourself "Thank God, isn't he a kind fellow?" He smiles, though he may know you will be dead on Monday, for he is a splendid actor. So, I beg of you young men, go out and buy a smile, for our ignorance is frightful.

Of all the difficult people you will have to attend, artists will probably be the worst; they are nervous, for they live on their nerves, or on other people's, and their keen observation makes them more awake than their fellows, so that they have to be handled with a silk thread. And please beware of the gentleman who says "I want to know the truth"; you can take it from me that he is the one who does not want to know it.

I beg of you to have a smiling chambermaid to open your front door, for we ring the bell in fear and trembling. Sometimes it is opened by a lady whose face says quite plainly "This way to the morgue." After a blow of that kind it is an extremely difficult thing to go into your waiting-room and read last year's *Punch* upside down and try to discover from pictures of a bathing lido whether those depicted are men or women. I hope you will all be happily married, but never let your lady talk to your patients about medicine and surgery. She will be a bore, she will make frightful bloomers, and she will probably silence your front-door bell. And do not keep your patients waiting; it used to be quite the correct thing to do. We know you are very busy, we also know you are very clever, otherwise we should not be there. So these dodges of an early Wimpole-street renaissance are quite unnecessary.

Will you be very definite when examining and diagnosing, even if you are wrong? And small-talk in the consulting-room is dreadful for us. We go there very worried, and we are not there from choice, however attractive the doctor may be. And when you become great surgeons and great physicians do not impress upon us that you are attending Lady So-and-So or Lord So-and-So. We come to you for your brains, and we do not want to hear about your patients who obviously have none.

Of course the bedside manner is a thing which, if carried to any great extent, makes one wonder whether one ought to be filled with doubt, or to invite the undertaker to lunch. We would like gentle straightforwardness, the truth wrapped up in hope. It is awful to go with a stomach-ache and be told you have some dread disease with a long name.

Optimism is a thing which we love; be even as optimistic as the cat who sat on the dome of St. Paul's waiting for a lark.

If you are going in for general practice, do not get a name for having a pet disease you are always looking for, even if a patient comes with a broken leg. There was a celebrated doctor in New York who made a special practice of taking bones out of noses, and a boy ran over to him one day and said "Doctor, my mother sent me over to say——" "Sit down," said the doctor, and when the boy had duly had the bone taken out, he said "Mother sent me to remind you that you are dining with us this evening."

Among us there are a lot of lying patients, who tell the doctor of things which are nothing to do with them. To one such young lady the doctor said "Now, let us begin at the beginning; do you suffer from cold feet?" "Yes, I do, but not my own."

There is another kind of liar, and that is the man who drinks very hard and will not own to it. A man came to a doctor with a nice rosy nose, and after hearing from the man about all sorts of diseases he asked "You drink a bit?" "Oh, no; little or nothing." "Tell me, exactly what do you drink?" "As a matter of fact I drink very little: I have a whisky-and-soda before shaving, I have a couple of glasses of port on the way to a friend's house; then I work till lunch, after which we have three or four gin-and-bitters together, and at tea time instead of tea I have brandy-and-soda; I drink everything that is going at dinner, but the serious drinking does not start until after ten."

And there are one or two tiny things I want to mention. Never let anybody talk scandal about anybody; shut both your ears and point to somebody and say "Go and tell him." If you want to make money you can bet ten to one against any mortal thing you are told being true. If you do hear scandal, forget it. Concentrate on making your opportunities, and then avail yourselves of them. If you look upon everybody as worth exploring you may occasionally find diamonds in the dust-bin.

Never quarrel with anybody. Life is a roulette table, and a number may come up three times. And don't get into the trick of saying "Everything has gone wrong to-day." Ask, rather, "Has one thing gone right to-day?" If it has, thank God.

Never, I beg of you, back horses, except in shillings. And I beg you, too, never go to money-lenders; you are not borrowing from one man but from a ring; they are a soulless lot and would play clock-golf round the Cenotaph.

I have made up my mind that this world is made up of 50 per cent. natural people, 30 per cent. shy people, 10 per cent. snobs, and 10 per cent. idiots. I ask you young gentlemen to be extremely nice to the natural people, to be tolerant to the shy people, give the snobs a quick kick in the pants, and thank God for the idiots, because they will never find you out!

And may I ask you never to talk medical "shop" in mixed company? Once, at a famous club, I heard a distinguished gentleman academically describing those diseases which we try to drown in alcohol, and at last someone said "Oh, please shut up, this conversation is getting like a Christmas number of *The Lancet*."

As you cannot advertise I will give you this bit of advice: always try to attend celebrities, even an actor, because they talk—not very well perhaps, but they talk.

In all this wandering address perhaps I have nudged your memories about one thing—namely, our love for you and our respect for you. You are quite different from us, and we wish you to be so. You are about to plunge into the great fight. May you have sunshine overhead and roses at your feet. I do not quite know how to put it, but I would like to say I thank you from my heart and the hearts of my whole profession for allowing me to come here to-day, because you have done them a great honour in allowing an actor to come into a great house of learning. And I think probably it is the first time in history. Therefore I thank you on their behalf for what you have done for them and what you have done for me; and I thank you for what you are doing for mankind.

"AND EVEN NOW"

By Sir Alfred Webb-Johnson, C.B.E., D.S.O., T.D., F.R.C.S.

"Of my '*lecture*,' like not a single line;
But like my title, for it is not mine.
That title from a better man I stole:
Ah, how much better, had I stol'n the whole!"

What are you going to make of your opportunities, and what do you expect to learn from your teachers? On the scientific side all your school can do is to teach you principles based on facts in science and give you good methods of work. You have got to exercise your wits. Don't be like Strasbourg geese—and expect to be forcibly fed and crammed to saturation.

It is not possible for you to acquire an exact knowledge of every detail of all the sciences in which you receive instruction, though you may feel sometimes that your teachers and examiners expect you to do so. I would, therefore, impress upon you and your teachers that you should, during your curriculum, make sure of fundamental principles. Whenever it is possible to obtain an answer to the question, you should want to know the reason why. The study of anatomy, for instance, is not simply the memorising of facts. If morphology and comparative anatomy are not neglected the subject becomes alive and full of interest. Details fit naturally into place, and to acquire a working knowledge becomes a pleasure instead of a tedious effort of memory. I will illustrate this point by one example—the distribution of the nerves to the limbs. Do not be satisfied with knowing that the eighth cervical spinal segment innervates the ulnar side of the hand, but know *why* it is so distributed. Do not be satisfied with knowing that the musculo-spiral nerve supplies the extensor side of the upper limb, but know that it does so because the extensor side is the original dorsal side, and the musculo-spiral is a dorsal branch of the brachial plexus.

To emphasise the value of good scientific foundations I will quote Charles Bell, who wrote: "It has ever been my pride to join the pursuit of science and practice. In surgery they cannot safely be separated." If you study the lives of those most prominent in our profession—even in very special lines of practice—you will find that their early years after qualification

were devoted to the study of anatomy, physiology, and pathology. They rose high because their foundations were deep.

In medicine, however, besides acquiring scientific foundations you have to learn to practise an art. While a large part of medicine is a practical art, surgery is essentially so. In our hands as surgeons are the grave issues of life or of death, and we attack disease by an art which in itself may be dangerous. Therefore we must be masters of our art. Remember, however, that technique is not the be-all and end-all of surgery. It has been well said that fingers must not replace brains and handicraft must not outrun science. But medicine is not an exact science, so you have to develop the faculty of making practical and even vital decisions—all too often on imperfect evidence.

Your work in the wards and out-patient departments will bring you in touch with the human side of your work. You will learn that the individual patient you have to treat does not accurately fit the picture of the disease as described in books. As Alexis Carrel has said: "Disease is a personal event. It consists of the individual himself." There are as many different diseases as there are patients. The patient, moreover, is not limited by his outer covering. His surface is not his real frontier. A man may be more interested in his environment than in his own body. His position in his community, for example, may appear to him to be of more importance than life itself. Deprived of it he may prefer death—even by his own hand. The individual extends on all sides beyond his anatomical frontiers. Hence the importance of a study of psychology.

There are other experiences you can obtain while an undergraduate which you will find it difficult to come by in later years when your collegiate life is finished. You must learn not only how to read but also what to read, for of the making of many books there is no end and much reading is a weariness of the flesh.

You should learn to take part in discussions. Your medical society meetings will give you opportunities for practice. Do not fear to express your opinions. It is also important to practise putting your reports and views into writing. Nothing makes for accuracy and exactness like having to commit your descriptions to paper. As it has been truly said, "reading maketh a full man, conference a ready man, and writing an exact man."

Do not neglect the opportunities for athletics and for social life which your school offers. A famous surgeon was once asked what was the most necessary gift for a surgeon. His reply was—"rude health." As for social life, you will find as years go on that a dinner often lubricates business.

Do not imagine that your school can teach you everything worth knowing. You must break away sometimes and visit other hospitals and listen to other teachers. While it is good to take pride in being a King's man, and while esprit-de-corps is stimulated thereby, it does not warrant any air of superiority or any attitude of regarding as unworthy those of other schools.

And what of when you are qualified? Then it will be well to remember Francis Bacon's words, "I hold every man a debtor to his profession; for the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavour themselves by way of amends to be a help and ornament thereunto." How are you to attain this desirable and commendable end? You can all endeavour to be worthy practitioners and to some of you may be granted the privilege of adding to knowledge and advancing the science of medicine.

The practice of medicine means a life of devoted sacrifice. When speaking at the Royal College of Surgeons of England Kipling said: "Is it any wonder, gentlemen of the College of Surgeons, that your calling should exact the utmost that man can give—full knowledge, exquisite judgment and skill in the highest, to be put forth, not at any self-chosen moment, but daily at the need of others?" To be equipped to fulfil this task you must realise that your foundations are not finished when you obtain your qualification to practise. You must aim at securing a resident post at your own hospital. I never cease to wonder at the transformation which takes place in a man after he has been in residence, even for a short time. Maybe only a few weeks previously he has seemed a very helpless fellow at a ward class or at an examination. The shouldering of responsibility transforms him into a man whose views you receive with respect, and often with surprise and admiration, and whose suggestions you are often prepared to accept with gratitude. If possible take more than one resident appointment. Lister realised the importance of this thorough grounding, for after leaving University College Hospital, where he had been house surgeon to Erichsen, he went to Edinburgh and became house surgeon to Syme.

But there are not enough resident appointments in your own hospital for all of you to have the good fortune to obtain one. Do not hesitate to seek elsewhere. In the reorganised municipal hospitals you will obtain most valuable experience. I am convinced, however, that no other resident post quite equals one at a hospital with a medical school, and, in my opinion, the number of these appointments should be increased. I am convinced that in most resident appointments the holders of office have too much to do. They are not only overworked and get too little time for recreation, but they are so pressed that they have not time to think, or thoroughly to digest the valuable experience they are gaining. They have too many patients under their care and too many masters to serve. In my view the number of resident appointments at most hospitals with medical schools could be almost doubled—with advantage to the hospitals and the holders of the appointments. A much larger number of men could then obtain this invaluable experience.

Lord Nuffield has placed £100,000 in the hands of trustees, including the Earl of Athlone and the High Commissioner for South Africa, for the development of orthopædic surgery and an organised service for the early discovery and cure of crippling disabilities in South Africa. Mr. G. R. Girdlestone, Nuffield professor of orthopædic surgery at Oxford, will visit South Africa to prepare a scheme for the administration of the fund. He will be accompanied by Miss I. M. Nangle, secretary of the Central Council for the Care of Cripples. The scheme will probably include arrangements for the specialist training of young South African surgeons in this country.

SOUTH ELMSALL HOSPITAL.—This hospital is making its first public appeal since it opened 26 years ago. It is hoped to increase the number of beds in the women's ward from six to twelve and to build a new ward for children, for whom there is at present no accommodation. The estimated cost of the extensions is £3000.

POST-GRADUATE LECTURES

ENCOURAGED by their success in previous years, several of the London teaching hospitals have again been holding brief post-graduate courses for former students and sometimes for other practitioners too. This autumn, as before, we are publishing extracts from, or abstracts of some of the lectures given. Dr. Whitby spoke at the Middlesex, Dr. Curran at St. George's, and Mr. Lake at Charing Cross.

THE COMMON ANÆMIAS

(DR. L. E. H. WHITBY)

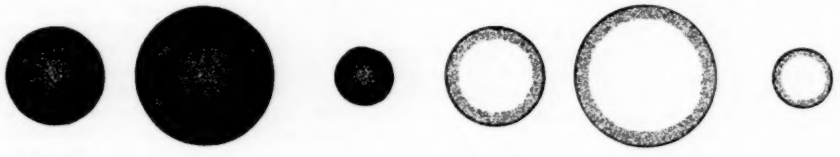
DURING the course of a year there pass through my department some 2000 blood counts on patients who are suspected of being anæmic. Not 5 per cent. of such counts show any gross anæmia and in such as do the condition is often unsuspected. It is evident therefore that the symptoms of gross anæmia and of mild anæmia are somewhat different from the appearances and symptoms which lead to a suspicion of anæmia. Actually the blood count is the only real test. Apparent anæmia—a white, tired appearance—is more often due to vasomotor weakness and debility than to a poverty of the blood. Doctors are often surprised at the almost polycythæmic blood of pale-looking patients and equally surprised to find that patients with a ruddy or suntanned complexion are grossly anæmic. The symptoms of gross anæmia are palpitations, shortness of breath, disturbances of vision, fainting on effort, fatigue, and lassitude. Such patients are often sent to a cardiologist with no suspicion that they are anæmic. The symptoms of mild anæmia are mainly fatigue, lassitude, and headaches, which are often associated with indigestion and constipation.

Supposing we find a patient who is definitely anæmic, whether gravely so or mildly so, let us firmly grasp the basic fact that the anæmia is almost never a disease per se. It is a symptom into which the wise physician will carefully inquire before beginning treatment. Let us realise that anæmia occurs when blood regeneration does not keep pace with blood destruction, whether this destruction be the normal daily process, or the violent one of a hæmolytic anæmia, or the destruction by external loss from hæmorrhage. Let us realise that the process of blood formation may be rendered less efficient by reason of a vast number of causes. We have the inhibitory action of septic foci—teeth, sinuses, tonsils, bowel, urinary and genital tracts; inhibition from toxic diseases such as tubercle, rheumatism, nephritis, malignant disease; inhibition from malnutrition, underfeeding, unsuitable feeding, improper digestion, and improper absorption as in diarrhœa and other intestinal troubles. We must consider all this list and more before coming down to the classical blood disorders which always spring to the mind—namely, pernicious anæmia and idiopathic hypochromic anæmia. Let us realise that loss of blood may be more than a patient ever admits; that the menstrual function or uterine loss may be underestimated and that slow oozing from a gastric or duodenal ulcer may not produce alimentary symptoms. In none of these conditions is the anæmia a primary factor. It is merely a symptom. Probably the commonest cause of mild anæmia in general practice is due to mode of life—overwork, an unsuitable occupation, a non-physiological life, burning the candle at both ends, bad habits, all of which lead to a vicious circle of debility and undernutrition. The second most common group is one in which, to the mode of life, is added a mild focus of infection. It is surprising what debility a sinus or a tooth can produce when coupled with the necessity for doing a hard day's work. It is surprising how much the small amount of anæmia associated with this debility can reduce efficiency. It is rare for such anæmias to respond to therapy unless the cause is removed. I would put the anæmias of general practice in the following order of frequency:—

(1) Toxæmia and debility	Mild anæmia.
(2) Bleeding (uterine and gastro-intestinal)	Severe or mild.
(3) Malignant disease, tubercle, and rheumatism	Severe or mild.
(4) Gastric dysfunction (idiopathic hypochromic anæmia and pernicious anæmia)	Severe or mild.
(5) Rare blood disorders	—

I would put in a plea to stop the practice of treating an anæmia before its cause and true nature have been discovered. It is to my mind almost criminal to treat symptomatically an anæmia due to hæmorrhage without thinking of the underlying cause or doing anything to control the loss. The proper time to repair the anæmia, unless the loss is acute, is when the bleeding has been stopped. Bear in mind that anæmia may be an ominous symptom of a grave disease or a symptom of a condition in which the prognosis is so good that one is certain of a grateful patient—our choicest reward. From an efficient and complete examination of the blood itself many hints can be obtained as to the probable cause of an anæmia, and it is a wise policy to have one full hæmatological test by an expert before treatment has intruded to

DIAGRAMMATIC REPRESENTATION OF RED CELL SIZE AND HÆMOGLOBIN CONCENTRATION



Size:	Normal	+	−	Normal	+	−
Hæmoglobin concentration:	Normal	Normal	Normal	−	−	−
Colour-index:	1	> 1	< 1	< 1	1 or < 1	< 1
Designation:	Normocytic Normochromic	Macrocytic Normochromic	Microcytic Normochromic	Normocytic Hypochromic	Macrocytic Hypochromic	Microcytic Hypochromic
Hæmatinic required:	Nil	Liver	Nil	Iron	Liver and iron	Iron

obscure or perhaps remove valuable diagnostic findings.

One of the difficulties of the practitioner is the interpretation of baldly stated hæmatological reports. Of his own laboratory training he usually remembers certain fixed figures for red cells, hæmoglobin, and leucocytes, and he retains an impression that when the colour-index is high liver is the treatment of choice; when it is low iron is indicated. He may vaguely remember some facts about red cell size and the labour involved in making measurements of cells in order to determine whether the anæmia is macrocytic (megalocytic) or microcytic.

The colour-index is not now used in modern hæmatology, nor does the hæmatologist, who wishes to make a complete examination, arm himself merely with a box of blood pipettes. Instead he takes a 5 c.cm. syringe, a few slides, and a tube which contains an accurate amount of soluble oxalate salts to which he may add exactly 5 c.cm. of blood obtained by venepuncture. This is a procedure which the practitioner would find easier than most of the devices which are supplied to him for blood counting. The virtue of the oxalated tube is to supply unclotted blood in which, by reason of the exact amount of oxalate and the exact amount of blood, the cells are quite unaltered by osmotic effects. With such a sample an ordinary routine blood count can be made as well as a test for cell volume by means of the hæmatocrit—a far simpler procedure than the Price-Jones measurement method; the invaluable icterus index and sedimentation-rate can also be readily determined. Other more elaborate procedures (reticulocytes, platelets, fragility, &c.) can be performed on the same sample if they appear to be indicated during the course of the examination. This method has many advantages over the old technique which allowed only of an estimation of hæmoglobin and red cells and the calculation of a colour-index.

The colour-index is defined as the average amount of hæmoglobin per corpuscle compared with a normal corpuscle, the normal average figure being unity. It is usually forgotten that the index has a normal range from 0·85–1·1. When the index is high the average amount of hæmoglobin is exceeded and if low it is reduced. On what does the colour-index depend? There are two factors which alter the index—cell size and hæmoglobin concentration. Whenever a cell, whatever its size, is fully saturated with hæmoglobin—and there is a physiological limit of approximately 38 per cent.—no more iron can enter into the cell however much is given in medicines. But whenever the hæmoglobin concentration is below 32 per cent., again irrespective of cell size, iron is useful. Secondly, whenever the cell size is large, irrespective of hæmoglobin concentration, liver may be expected to do good. The fundamental facts to determine in a blood count are therefore the separate factors of cell size and hæmoglobin concentration. It will be seen from the diagram that alterations in the colour-index depend on both factors and that the index sometimes gives a result which is an inseparable compound of the two. A high colour-index inevitably means a large cell size, a low one does not necessarily mean the reverse. A low index may mean small cell size or small hæmoglobin concentration whilst, if the concentration is low enough, the colour-index may be low even with large cells. The hæmatocrit enables one to determine independently the corpuscular size in all planes as well as the hæmoglobin concentration. The former is the key to the liver therapy, the latter to iron.

On the basis of these two factors, Wintrobe has classified the anæmias on a hæmatological basis into four main types:—

(1) Macrocytic.	(3) Simple microcytic.
(2) Hypochromic microcytic.	(4) Normocytic.

The majority of the mild anæmias of practice are normocytic (the debilitated type) or simple microcytic (the toxic type); in neither of these classes do hæmatinics achieve much success. Next in frequency are the hypochromic microcytic type, in which there is iron deficiency through hæmorrhage or gastric dysfunction, including idiopathic hypochromic anæmia. Lastly comes the macrocytic or pernicious anæmia class—bearing in mind that pernicious anæmia may be closely imitated by carcinoma of the stomach and other gastric disorders or even by cirrhosis of the liver.

I have mentioned the value of the sedimentation-rate as a routine procedure in hæmatological examinations. It is well known that the rate is increased not only in tubercle but with any infective process that is not just a small local focus, with malignant neoplasm, with nephritis, with active ulceration and many other organic lesions. When the rate is increased in association with anæmia there is inevitably some organic cause for the anæmia; a correction must be made for sedimentation due to the anæmia itself. The test is extremely useful in pernicious anæmia, for the uncomplicated disease does not increase the rate whereas a neoplasm does.

Finally, may I say that in those macrocytic anæmias which do not respond to adequate treatment it is wiser to search for a cause other than pernicious anæmia rather than keep changing to other liver preparations.

THE ARCHES OF THE FEET

(MR. NORMAN LAKE)

WHEN I was a student no part of the instruction given us seemed more stable than what we were told about the arches of the feet. These arches appeared to be obvious structures, maintained by the shape of the bones, by the strength of the surrounding ligaments and, in activity, by the contraction of muscles, and derangement was regarded as a mechanical breakdown needing mechanical means of remedy. The physiologists, however, upset this purely mechanistic picture by teaching that posture in many other parts of the body is maintained by muscular tonus. This arrangement would obviously be of advantage in the case of many joints (e.g., the knee), for it would mean that their controlling muscles were always prepared for instant activity. Yet in spite of the body of current teaching I feel compelled to disagree that the theory of postural tonus can be applied to the arches of the feet. Indeed my inquiries and experience have led me back to almost the same mechanical outlook as has been generally discarded.

I base my opinion partly on our knowledge of the evolution of the foot. The progenitor of man and of the anthropoids, extinct and extant, was an arboreal animal with prehensile possibilities in all four feet. If we had a specimen of its rear foot, we should find that it had a small backward protrusion of the os calcis—an attempt to form a heel in a small, inefficient way, merely to enhance the leverage of the foot. Pro-man soon grew too heavy for trees and descended to the ground, but not before he had learnt to walk upright on boughs, as do the gibbons at the present day. At this stage the heel lies parallel with the bough or the ground; not, however, in order to transmit weight but only to increase leverage.

The foot of the pronograde apes shows a tremendous preponderance of the metatarsal and phalangeal bones, and very small tarsals including the os calcis. The heel never even approaches the bough. The gorilla has never developed an arch, but man has developed a definite arch and a large heel. From chimpanzee to adult man there has been a progressive increase of the tarsus in proportion to the rest of the foot; the posterior part of the foot has been developing tremendously while the fore part has slowly diminished, with the notable exception of the first digit.

Sir Arthur Keith has ably attempted to harmonise the evolutionary facts with the postural theory. He has pointed out that in all the pronograde apes the tibialis posticus, having passed down along the inner border of the ankle-joint, extends straight across the foot. There it divides into several slips, which are inserted into the bases of the outer four metatarsal bones, with no attachment to the navicular. Its function is to oppose the four outer digits to the first. In man the tibialis posticus has received a secondary attachment to the navicular, the original insertions being represented by extensions forward into all the bones except the os calcis. Keith interprets this change of insertion as evidence that the force which was originally a postural tonus, helping the animal to maintain its grasp of the bough, has in man been diverted into a constant pull on the navicular. To this upward tension he attributes the arch of the foot.

I am sorry to say that I cannot accept this interpretation. If the arch is a mere posture, why should it not appear as such in the ordinary foot? No one but a ballet-dancer, who has been trained every day from an early age in these movements, can raise and drop the arch at will. The physiologist may retort that ordinary persons could do this if they were not artificially hampered by the secondary rigidity that footwear produces. But I doubt whether footwear is as restrictive as that. Rigidity is so difficult to secure when needed for legitimate orthopædic purposes that I doubt whether even the lifelong wearing of boots and shoes could produce it. Moreover, primitive peoples who do not wear them cannot raise or drop their arches at will. Some African natives have high and some have low arches, depending on race, and both varieties are normal. They exist equally in the European foot.

Some authorities say that the infant's foot has no arch until postural tonus develops. But this is pure fiction. The baby's foot has a wonderful arch, but it is concealed by a thick pad of fat. When an infant is very emaciated and the fat of the sole is absorbed, the high arch becomes visible. The proportion between fore and hind parts in the foot of the nine weeks' fœtus is comparable to that of the chimpanzee, and illustrates this early stage of evolution.

My own belief is that the arch is an architectural feature depending upon the disposition of the bones and, when weight-bearing upon the additional support, of ligaments. The contractural activity of the muscles (when it comes into play) has a secondary effect in supporting the arch. The arch is formed because man, when he adopted the upright posture, needed a support for his foot behind the axis of the ankle-joint in order to keep the line of the centre of gravity within the base. The upright position caused the large calf muscles to pull very strongly upwards, and a great effort of leverage was required of the ankle-joint. By Wolff's law, bone would be formed in the proper place and to the extent necessary to resist the stresses it encountered, and the os calcis therefore developed both backwards and downwards to resist the great additional stress thrown upon it in walking. The downward growth developed in direct opposition to the stresses produced by the calf muscles in accordance with this law. The arch is not a sinuous curve but a triangular structure, the very existence of which depends upon the development of the heel backwards and downwards. It is a structural feature, not to be drawn up and down by the action of the muscle, and certainly not by postural tonus. This view of the arch, though contrary to accepted teaching, has recently been confirmed at all points by Morton, the American anthropologist and anatomist.

This structural view of the arch implies, of course, a profound difference in therapy. The human foot is now passing through a stage of development from the flexible, prehensile foot of the anthropoids to a completely rigid structure which is all that is essential for the very gross purposes of locomotion. It will be rigid through its whole extent except for the hinge movements of the ankle-joint and the metatarso-phalangeal joints. This structure will be efficient. The smaller joints have little usefulness, and a skilled man can walk perfectly well on an artificial foot containing only those two large joints. At the present time we have advanced, I believe, a good way towards the attainment of this evolutionary destiny, although there is still a good deal of mobility remaining. To attempt to increase this by treatment is however to act in direct opposition to the indications of nature. A subsidiary function of the arch is to protect the small delicate muscles and structures in the hollow of the foot, pressure upon which causes such intense pain.

I hope that this interpretation may make it easier to discriminate between the many types of treatment advocated at the present day. There is, I think, no necessity for a spring mechanism in the foot, and though many rigid arches are relieved by manipulation, the relief is obtained only when osteo-arthritis is present. I do not agree that arch supports are, ipso facto, harmful; I prefer to believe the millions of people in this country who obtain ease from them rather than the orthopædists who disapprove of them. The female foot, adapted to the wearing of a high heel, is of course a different matter. Lowering the heel does not always relieve pain; some feet are beyond cure, and the best palliative is then sometimes even to raise the heel.

PROGNOSIS IN DELIRIOUS STATES

(DR. DESMOND CURRAN)

DELIRIOUS states have features in common which permit of their rough separation as a group. Thus the main characteristics of indubitable delirium can be summarised in the statement that it is a *variable*, restless, suggestible, confused, and clouded state, with a striking frequency of visual hallucinations and paranoid tendencies and ideas, and an accompanying labile mood, which, like everything else, is very variable, but predominantly irritable, excitable, anxious, fearful, and depressed.

But a general statement of this kind leaves the individual and personal setting out of account. Hoch, Kirby, and numerous other authors have emphasised that the delirious reaction is not merely dependent for its occurrence, form, and content upon what one may, for convenience, call "the noxious dose," but also on the previous constitution, equipment, and experiences of the individual recipient. Certain people develop delirious reactions on very slight provocation to any exogenous cause, and both the young and the elderly or arterio-sclerotic are more

liable to develop reactions of a delirious kind than are those in the prime of life and health.

There is a certain amount of evidence that this predisposition is greater in some families than in others, and members of such families, according to Kleist, tend to react readily with confusion. Again Brugger found that confusional states are much commoner in the families of delirium tremens patients than in the ordinary population, or than in the families of chronic alcoholics who did not develop D.T. Finally, the type of delirium shown is usually strikingly constant for each individual when observed in more than one attack, even with a complete change in the cause. These points may be of some assistance, not only in predicting occurrence, but in predicting recurrence; and, even, on occasion, in predicting anomalies and complications which have previously been shown.

The prognosis will, of course, necessarily depend to a major extent upon the nature of the "noxious dose"—i.e., upon the natural effects of the disease or intoxication responsible for the condition. In the majority of cases, when physical recovery takes place, the delirious symptoms clear up, so that the "mental" prognosis is excellent, recovery being rapid and complete. Thus of 106 cases of diverse origin, which were all of sufficient severity to warrant special hospital care, in 75 per cent. the maximum disturbance was over in less than three weeks, and many got better in a much shorter time. But some died. This is, of course, inevitable when a delirious state develops in a fatal illness such as infective endocarditis. It is well, however, to remember that physical prostration consequent upon restlessness and excitement may induce a fatal issue which otherwise would not have taken place.

Broadly speaking, the unstable and "psychopathic," the young, and the mentally defective, seem specially liable to develop delirious reactions of a wild and impulsive type. Bonhoeffer considered suicide and self-injury to be rare in deliria; he said that, like violence to others, if they occurred at all, this would usually be at the beginning in the initial stage of terror. (He was discussing alcoholic states.) In the 106 cases I have mentioned, 10 patients talked of suicide, and 7 made definite attempts. We thought that special precautions were called for, both in the types apparently liable to wild and impulsive delirium, and also in patients of depressive temperaments, especially if they had suffered from depressive illnesses in the past.

According to Meggendorfer, the mortality figures for alcoholic deliria vary widely between 1 and 37 per cent. The earlier writers gave the higher mortality. Kraepelin's figure of 9·7 per cent. agrees with Bonhoeffer's of 9 per cent. recorded in the Breslau psychiatric clinic. The gaols were more fortunate, and had only 1 per cent. Flippant or irreverent deductions from this last figure are probably out of place.

Severe deliria, especially those with focal cerebral signs, are held to run a short course and often to prove fatal. Michaelow found that drunkards who had been abstinent for a fairly long time, sometimes died quickly after taking a relatively small amount of alcohol.

It has been pointed out that, as a rule, the prognosis as regards the mental state is excellent, so that recovery is rapid and complete. But there are certain important exceptions:—

1. *Delirium as an episode complicating a pre-existing psychosis.*—It is certainly not very uncommon to see confusional states resulting from alcohol, and especially from bromide—the former usually taken on the patient's own initiative, the latter more frequently on medical advice—complicating the early stages of quite an independent psychosis. The history alone may reveal this important fact. After the delirium has cleared up, the underlying and pre-existing psychosis will then become evident, and the rapid and complete recovery which has perhaps been promised as regards the mental state will not take place. Barbour, Pilkington, and Sargant (*Brit. med. J.* 1936, **2**, 957) have pointed out the startling frequency of bromide intoxication. It is not, perhaps, widely recognised, and well worth bearing in mind.

2. *Delirium as the prelude to other psychoses.*—A variety of psychotic reactions may follow a delirium, which were not apparent prior to its development, such as schizophrenic, hallucinatory, depressive, and paranoid states. Particular difficulty can arise in connexion with certain of the schizophrenic-paranoid series, which can, I think, for a time be symptomatically indistinguishable from "true" delirium, if such a phrase can be used.

In a study of 102 cases of alcoholic hallucinosis, Kirby found that a careful study of the previous personality of those patients who developed systematised delusional ideas always revealed evidence of serious maladjustment before the onset of the illness itself. In my own material, though there were exceptions, possibly dependent upon inadequate investigation, the same principle appeared, broadly speaking, to hold. It is wise therefore to be more guarded in predicting the probable duration and outcome when the facts available about the previous personality of the subject give, in general, grounds for psychiatric concern. There are also certain danger signals revealed by a study of the delirium itself. Thus, as Bonhoeffer pointed out, if the delirium is strongly tinged with passivity feelings, bizarre hypochondriacal preoccupations, or other schizophrenic features, this should suggest the possibility that a prolonged or even chronic type of schizophrenic illness may supervene. Schizophrenic-like features are normally very rare in delirious states except in the mentally defective or the very young.

A very important group is constituted by the puerperal confusions. The importance of toxic as opposed to constitutional and personality factors is commonly over-emphasised in cases of this kind. The facile attribution of a confusional condition to a trivial or speculative source of toxæmia may prove a prognostic stumbling-block, if a necessarily rapid and complete recovery is deduced. It is always well to question "true" benign delirium, and unwise to predict a rapid recovery, when evidence of infection or intoxication is trivial or cannot be found after a careful search. Thus if a confusional state develops in the puerperium, or indeed at any other time, and if in such a case an exogenous factor is not marked, or cannot be found, it is wise to be very guarded as to what may happen, especially when the confusional state assumes an anomalous form. Disorganisations of personality of malignant schizophrenic type not infrequently start with an initial confusional state; and by no means all those conditions vaguely labelled "confusional insanities" ultimately do well.

The prognostic principles, difficulties, and variations are well shown by alcoholic states. It can be suggested that this is because in the alcoholic cases the "noxious dose" varies greatly in quantity (and quality); and also because the recipients of the "noxious dose" not only vary greatly as to their individual susceptibility or "the strength of their heads," but contain amongst their members a large number of persons of abnormal and maladjusted type. Bumke and Bonhoeffer believe that chronic sequelæ

of Korsakow, hallucinatory and paranoid type are to be feared if there are clear neuritic signs, or if the delirium is anomalous in form or duration, or does not end by "crisis." Kraepelin gives the average duration of alcoholic delirium tremens in his cases as 3–6 days, with the larger number in the earlier period. He also found in all his cases of alcoholic hallucinosis a complete recovery in nearly half (but they tended to have frequent later attacks); a quarter passed into a weak demented state; and a quarter became chronically deluded and hallucinated. Korsakow himself was not so pessimistic about his own syndrome as are other authorities, such as Bonhoeffer and Meggendorfer, who state it is very rare for a full-blown case to recover completely, the usual outcome being a silly, cheerful, irritable condition, with a lack of initiative and disturbance of memory and grasp. It is a syndrome which is so uncommon in the post-war period in this country, and I have such a limited experience myself, that I would greatly appreciate the experience of others on this point.

3. *Delirium followed by incomplete recovery and lack of "insight."*—The conditions favourable for the development of marked paranoid features appear to be (1) that the "noxious dose" should be of long duration but relatively light intensity, and (2) that the recipient should be of a suspicious or touchy disposition, or, in brief, a somewhat paranoid type. Patients who suffer in one or both of these ways not infrequently fail to obtain a completely calm and detached attitude towards their delirious experiences after these have ceased; and may continue to believe they were badly or even shamefully treated, persisting in accusations which are sometimes difficult to refute, and which, moreover, may be believed by others, unless a warning of this possibility has been specially made. These querulous complainers of course merge into the more definite paranoid states. Mentally defective patients are also liable to fail in regaining complete objectivity and detachment.

Finally delirious reactions in the elderly, or in those with cerebral arterio-sclerosis may clear up, leaving a permanent "organic dementia" of greater or less degree. A careful history, the physical examination, or the patient's age, should suggest this possibility.

I shall not touch upon the problem of the chances of *relapse* in alcoholics, except to say that the environment is clearly of great importance. Thus the inquiries of German workers (Lippman and others) in the war disclosed that apparently hopeless drunkards became useful members of society.

* * *

I regret that I have been unable to provide you with a larger number of precisely ascertained concrete facts; but, for the reasons I have attempted to give, these are hard to come by. At all events, the literature is not replete with them. The great importance of the constitutional and personal factors in assessing prognosis renders figures based upon the gross examination of a large number of cases of relatively little value; and attempts at detailed individual studies of a sufficient number to possess statistical significance is, for many reasons, an extremely difficult and certainly a very laborious task. This is the dilemma with which psychiatry is constantly confronted; and, as is well known, refuge is often sought from these difficulties in interpretative excursions of a kind not susceptible either of proof or disproof, which, though the greatest fun, are perhaps of little worth.

PANEL AND CONTRACT PRACTICE

"Ask Your Doctor"

IN opening the national campaign to encourage the wider use of the health services, the Prime Minister, after referring to those services which come to the individual without any effort on his part, spoke of another and more personal kind of health service which involves the necessity on the part of the individual man or woman to "do something" in order to take advantage of it. In this category of personal service, he said, I give naturally a foremost place to that old-established and trusted institution, the family doctor. "A cardinal rule of health is 'Ask your doctor' and, above all, 'Ask him in time.'" For an ever-increasing proportion of the population the family doctor is the insurance practitioner, and there are admittedly scores of insured patients who need no encouragement to apply to him on the slightest pretext and are satisfied so long as they are provided with a bottle of medicine. But there are still some who are diffident in applying for advice because of a lingering feeling that panel treatment is not all it might be. Here is a recent incident. A woman became insured and as she failed to choose an insurance doctor she was eventually allocated to a practitioner who, unknown to the insurance committee, was her family doctor. In due course she wrote to the committee that she had always been a private patient of the doctor and had no intention of having panel treatment from him. The doctor also assured the committee that the patient wished to remain his private patient. But (as is well said in "Medical Insurance Practice") the frequent treatment of insured persons as private patients is bound to have unfortunate reactions on the good name of the service and to prejudice the position of the doctor concerned. If an insured person clearly understands from his doctor that there will be no difference in the kind of treatment which he will receive, whether he is treated as a private or as an insured patient, and that his doctor is already paid by way of insurance premium, he is hardly likely to want to make a fresh payment when he falls ill.

Take another point: Insured persons are entitled to receive proper and sufficient medicines. The practitioner is of course the judge of what is necessary for a particular patient, but having decided he should then prescribe so that the patient may receive it free of cost. Recently a man, suffering from hæmorrhoids, complained that on attending his insurance doctor he was given three sample suppositories and told he could buy more at the chemist's. Actions such as this are bound to lend colour to the impression that panel treatment—after close on twenty-five years' development—is still not quite satisfactory.

A third case illustrates another cause of irritation which a little breadth of vision could remove. A man was struck by lightning while at work, and while he was still unconscious a local insurance practitioner was summoned to attend him. In due course, although it was obvious from the nature of the man's occupation that he must be an insured person, a bill was rendered. The insured person applied for the withdrawal of the account but was told that as neither his own doctor nor his deputy was sent for, and as they were available to provide treatment if they had been called upon, nothing could be done. The panel committee stated they were satisfied that

the charge was in order and that no claim for emergency treatment could be made against the patient's own panel doctor. Claims for emergency treatment can, they ruled, only be made if neither the insured person's doctor nor his deputy is available. But surely although the patient's doctor may be at home at the time, he may not be "available" to give immediate treatment if the accident occurred some distance from his house, or if, as in this case, the only person who knew the name of the responsible doctor was in a state of unconsciousness owing to an accident or other sudden emergency. And what is the meaning of the phrase in the distribution scheme that "unless the panel committee are satisfied that there was *reasonable cause* for not summoning the practitioner responsible for treatment the committee shall deduct . . ." if it is not to provide for the extreme case such as this when there clearly was reasonable cause.

Is it too much to hope that the contribution of insurance practitioners to the campaign to encourage the wider use of the health services may be a resolute attempt to demonstrate that medical benefit under the N.H.I. Acts, although still restricted to a general practitioner service, is in its fullest sense a service rendered by the trusted family doctor?

SPECIAL ARTICLES

AUSTRALASIA

(FROM OUR OWN CORRESPONDENT)

THE NATIONAL HEALTH

THE same tolerant pity that we feel for our unenlightened ancestors of the Middle Ages will doubtless be felt by our descendants for our vaunted Australian civilisation and its attendant ills—tuberculosis, cancer, numerous acute infectious and chronic diseases, and influenza. There is also our relatively high maternal and infantile death-rate, not to mention the common cold. Prof. Harold Dew, who holds the chair of surgery at Sydney, spoke of some of these things in his Anne Mackenzie oration for 1937, delivered at the Institute of Anatomy in Canberra. The Australian standard of health, he said, is lamentably low, and only a small proportion of the population enjoys perfect health. The number of patients attending public hospitals in Australia is higher than it should be, and there is a vast amount of chronic ill health in Australia, causing unnecessary suffering, loss of time, and lessening of national efficiency. The death-rate would have to be greatly reduced, and if proper measures were taken there was no reason why Australia should not build up the highest national health standard in the world. It has been realised that education of the people on health matters is essential, and the Commonwealth Council for National Health and Medical Research was formed for this purpose. It has recommended the granting of money for research, and its other plans include the appointment of well-paid junior research workers for three-year periods. Senior research workers would be chosen from their ranks, given permanent positions, and employed in special work.

Prof. Dew said it was impossible to forecast the future of medical practice in Australia. It might be a form of national insurance, a system of State medical service, or perhaps a compromise.

POST-GRADUATE EDUCATION IN NEW SOUTH WALES

Since the beginning of the century Sydney has been a centre for post-graduate teaching in medicine, courses having been arranged at intervals by the University of Sydney and by the New South Wales branch of the British Medical Association. There is now a Permanent Post-Graduate Committee in Medicine, supported by government grant, and a general revision course, designed primarily for general practitioners, is held each year, including intensive instruction at all the larger metropolitan hospitals. Country practitioners may attend week-end courses held at country centres. Special courses are also provided for those seeking higher degrees and diplomas; for example, during the current year a course will be provided for entrants in Part 1 of the examination for the degree of master of surgery, this course being equally suitable for the primary F.R.C.S. Eng. Arrangements are made by the committee for lectures by visiting lecturers and also for residential post-graduate studentships for obstetric, children's, and general hospitals. Instruction in the diseases of children and in infant feeding is provided and attendance at clinics for the diagnosis and treatment of cancer and tuberculosis, and tuition in anæsthetics is arranged. The school of public health and tropical medicine in the University of Sydney conducts diploma courses.

A special hospital has now been inaugurated in New South Wales for the furtherance of post-graduate teaching. The constitution of the Prince Henry Hospital was recast by an Act passed a year ago, and a board of fifteen directors was appointed which is required to conduct and maintain the hospital for the treatment of public, private, and intermediate patients and to provide ample opportunity for post-graduate teaching and research work in medicine to be carried out under the auspices of the University of Sydney. The training of medical superintendents, hospital managers, hospital secretaries, hospital matrons, nurses, masseurs, almoners, dietitians, X ray technicians, and pathological technicians may also be undertaken by the board. Besides the honorary medical staff of the hospital, a staff of associate honorary medical officers has been appointed. This includes, ex officio, any professor or teacher in any of the subjects of the medical curriculum of the University.

FOUNDATION OF INSTITUTE OF MEDICAL SCIENCE LAID IN ADELAIDE

The foundation-stone of the first Institute of Medical Science in Australia was laid in Adelaide on the first day of the 1937 Australasian Medical Congress. The plans for the spacious modern building, to cost over £50,000, had been sanctioned by the South Australian Government, which had also subsidised it. The building, which will be erected in the grounds of the Adelaide Hospital, adjacent to the University, will contain laboratories with every facility for research work in pathology, biochemistry, bacteriology, and veterinary pathology. Provision is made for a museum of pathology (the Martin museum), and for a collection of medical records illustrating the history of disease in Australia. The institute will be affiliated with the Adelaide University, the Adelaide Hospital, and the nutrition laboratory of the Council for Scientific and Industrial Research. It is anticipated that it will become the centre of learning of the biological, physiological, and pathological aspects of medical science in South Australia. Special consideration will be given to the

compiling of records of race, occupation, nutrition, and climate.

The institute will be controlled by a committee representing the Government University and the Adelaide Hospital, who have appointed Dr. Weston Hurst of the Lister Institute, London, as director, and will be jointly responsible for his salary of £1500 per annum. Towards the cost of the building £15,000 was subscribed by Miss Edith Bonython, Mr. Norman Darling, and Mr. T. E. Barr-Smith, each of whom gave £5000. The Government subsidised that sum pound for pound, and £10,000 has been given by the Commissioners of Charitable Funds from the Martin bequest. The remaining £13,000 will be provided for in this year's estimates.

The three stages of the evolution of medical science in South Australia were traced by the president of the Congress (Sir Henry Newland) in a speech at the official opening. In the first, pioneers had received medical service from doctors who migrated with them, or from the sons of settlers who went abroad and qualified; there were no means of training students and no teachers. In the second stage, the training in medicine began with the birth of the medical school. By this time the number of medical men had greatly increased. Many kept in touch with scientific progress abroad, and passed their knowledge on to students, but it was beyond their compass to undertake independent scientific work, or to attack problems of medical research on a large scale. There were, of course, men in advance of their time, like Davies Thomas, Joseph Verco, and Prof. Watson, but they and others were handicapped by the lack of equipment. In the third stage, which had now been reached, the means for research in medical science had been provided. An able director and assistant director had been obtained from abroad. In the course of time they, and those associated with them, would train a new generation to take their places. It was only when a permanent institute of medical science or research had been established that medicine could really be said to have taken root in a young country. Science was the living source from which the practice of medicine derived its nurture.

The establishment of an Institute of Medical Science was in keeping with Australia's medical progress in other directions, said Prof. Grey Turner of London, who is a visitor to the Congress. He was impressed by the fact that provision was being made by endowments towards the salaries of the research workers, and he was also struck by the Government's willingness to augment the private grants.

PROBLEM OF MEDICAL RESEARCH IN AUSTRALIA

Prof. F. Wood-Jones, F.R.S., who has just given up his post as professor of anatomy at the University of Melbourne, having accepted a similar appointment at Manchester, has expressed grave doubts on the future of medical research in Australia unless conditions of work can be improved. One of the handicaps affecting research workers in this country is the continual pressure of work, both teaching and administrative, in the medical schools. This routine work allows little or no time for continuous research. Often the occupant of a chair is required to do work quite outside his professional sphere, such as solving small problems for, and answering innumerable letters from, practitioners in all parts of the State. Prof. Wood-Jones believes that Australia will continue to lose her most efficient workers unless she provides them with better opportunities. To carry out research work of national importance the coördination of effort and wise direction are essential. Until these are assured, especially close coördination between medical biologist, chemist, and physicist, the wisdom of providing funds for the endowment of research of a specific nature, such as cancer research, is doubtful. The likelihood of any individual investigator finding the answer to such a problem as cancer is almost negligible; so for the present at least Australia would be well advised to provide ample funds for unrestricted research by individuals, though every effort should be made to achieve a basis of coördination as soon as possible.

Another of the difficulties besetting Australia is the absence of a sufficient number of trained technical assistants. Owing to insufficient funds the teaching departments of medical schools cannot provide enough promise of promotion in work of this kind to attract men to a laboratory career. The outcome of Prof. Wood-Jones's suggestions is that rather than allocate money to some definite purpose and then try to find workers, it would be wise to place adequate funds at the disposal of an individual worker to enable him to develop without hindrance his own ideas.

EFFECT OF NEW ZEALAND TRAFFIC CODE

A remarkable decrease in the number of accidents in New Zealand has been evident since July, 1936, when a new strict traffic code was introduced and a speed limit of thirty miles per hour was rigidly enforced in "built up" areas. Statistics show that the number of deaths from accidents has been reduced by 100 a year; but the proportion of fatal accidents involving motor-cycles remains relatively large—almost a quarter of the total. It is expected that the adoption of a more serious attitude towards the problem of the intoxicated driver will reduce this menace to public safety.

MEDICINE AND THE LAW

"Under the Influence of Drink or a Drug"

EVER since Section 15 of the Road Traffic Act of 1930 came into force, motorists have been indicted (if the case went before a jury) with the offence of driving a car "under the influence of drink or a drug." These are the exact words of the statute but the form is possibly objectionable as containing an alternative allegation. The doubt is apparently to be settled in the Court of Criminal Appeal. A doctor was indicted last week at the London sessions in the words of the statute. He denied having been under the influence of either drink or drugs. He was convicted and fined £100 with £50 costs, and his licence was ordered to be suspended for seven years. His counsel challenged the indictment. The deputy chairman ruled that it was good, but granted a certificate for an appeal to the Court of Criminal Appeal.

The ancient law of indictments was strict indeed. In 1829 one Puddifoot was indicted for stealing a sheep. It was proved that he stole a ewe; but the statute used the word "ewe" as well as the word "sheep," and Puddifoot who had been convicted and sentenced to death was therefore pardoned because the indictment used the wrong word. In 1841 Lord Cardigan was indicted for shooting at Harvey Garnett Phipps Tuckett with intent to murder him, &c. He was tried by his peers and the case is memorable as one of the last prosecutions for duelling. It is even more memorable because Lord Cardigan was acquitted on the ground that the Crown

proved that the accused fought a duel and deliberately shot at Captain Harvey Tuckett but it was never proved that the victim was called by the names Garnett and Phipps as in the indictment. The curious technicalities of the law were swept away in 1915, and the Court of Criminal Appeal is nowadays disinclined to interfere with a conviction on the ground of a defect in the indictment unless the defect caused real embarrassment to the accused. In 1895 an indictment charging a man with "having used violence to or intimidated A.B." was held bad. The accused ought, of course, to know what charge he has to meet; an indictment in the alternative raises possible issues of repugnancy. If the results of drink and drugs can be identical, the police may perhaps not desire to specify the alternative which their evidence is expected to establish. The possible embarrassment of the police, however, is not so material as the possible embarrassment of the defendant.

Removal of Injured Patient

The problem of accommodating or treating the violent patient in hospital was illustrated at a Windsor inquest last week. A chauffeur named Patrick Donovan stopped a passing motorist and asked for a lift to the nearest telephone call-box as his car had broken down. When the motorist reached a telephone kiosk, the chauffeur, getting out before the car had stopped, fell in the road and injured his head. A police sergeant gave evidence at the inquest that Donovan was very violent while in the ambulance. On arrival at Maidenhead Hospital he was not admitted but was sent on to the public assistance institution. Dr. Iris Lamey, the resident medical officer at Maidenhead Hospital, explained to the coroner that the men's ward was overcrowded. She examined the patient and came to the conclusion that an immediate operation was not necessary. The only possible accommodation for him was the emergency surgical bed in a bathroom; there were no male porters on duty who were available for restraining the patient. Dr. W. J. Symons, medical officer at Maidenhead Institution Infirmary, said it was difficult to examine Donovan; he could not be sure whether he was suffering from a fit or from a fractured skull; he had never seen a man so violent. Next morning the patient was worse; Dr. Symons therefore ordered his removal to Windsor Hospital where he died within twelve hours of admission. Dr. E. Smith, house surgeon at Windsor Hospital, said it was impossible to operate or do anything for the patient; if he had been brought to Windsor in the first instance nothing could have been done for him; death was due to a fracture at the base of the skull. The jury returned a verdict of "death by misadventure" and added no comment. The case seems to be one of those which show the value and the prompt working of the inquest system. An investigation of an official nature was clearly desirable. The result was to remove any suspicion of neglect.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM A GENITO-URINARY SURGEON

II

I HAVE been reading Dr. Cronin's "Citadel" and wondering why it has made such a hit. But the wonder has been of short duration, for little thought is required to realise that no subject makes a wider appeal than a scandal. A scandal has the best news value in Christendom, as that very astute journalist, the late Horatio Bottomley, knew when he founded *John Bull*. Lewdness in Lambeth; Laxity in the Law Courts; Wideness in the War Office; Horrors in Harley-street—what better posters than these could be imagined? Small wonder therefore that a novelist can concoct a best seller out of the sins of us poor doctors. A Hindoo once said to me in reply to my question concerning the truth of "Mother India": "If you want to write about sewage, you can always find sewers."

* * *

My own surprise is not that doctors are dishonest but that considering their opportunities they remain as honest as they are. What unrivalled scope for fraud our practices give us. Is there any other trade or business in which it is the vendor who decides how much the purchaser must buy? Take as an example that charming old gentleman from the country who has just left my consulting-room after depositing three guineas on the corner of my desk. How delighted he was to be told that no immediate operation was necessary, and that, provided he remained carefully under the eye of his practitioner, he could return to his garden and his dogs. What a relief after he had resigned himself to the thought of a London nursing-home and an operation with all its attendant costs. Only last week he had visited his banker to make certain necessary arrangements, and now all that has been required of his purse has been a modest three guineas.

Some of my colleagues would have removed his prostate on the grounds of its being enlarged. What is more, they would have had good reason for doing so, for how do I know that his symptoms will not suddenly become worse? What guarantee have I that he will not get retention, or a hæmorrhage, or that his prostate, now innocent, will not in time become malignant? None at all. Then why not operate on him now, whilst he is in good health and by so doing forestall future trouble? Why not indeed, when he's willing to pay me a hundred guineas for my forethought. The chances are that in the end he'll die of something else before I've had his prostate. I may never see that hundred guineas.

"As to the honor and conscience of doctors," writes Bernard Shaw in his pontifical preface to "The Doctor's Dilemma," "they have as much as any other class of men, no more and no less. And what other men dare pretend to be impartial where they have strong pecuniary interests on one side?" *I* have a strong pecuniary interest on the side of removing that prostate and yet I've let its owner go. Why? Sentimentality I suppose, since Shaw won't even allow me the satisfaction of possessing a conscience. "Doctors are just like other Englishmen" he proclaims, "most of them have no honor and no conscience; what they commonly mistake for these is sentimentality and an intense dread of doing anything that everybody else does not do, or omitting to do anything that everybody else does."

* * *

But the performance of unnecessary operations for pecuniary gain is not the only form of dishonesty

of which we stand accused by Shaw and Cronin. We are also said to be intellectually dishonest: we lay claim to knowledge and powers that we do not possess; we clothe ourselves in infallibility.

To this indictment it is wiser to plead Guilty, but to urge that there exist extenuating circumstances. If the law recognised motive, which it does not, our defence would have been that we have assumed infallibility for the best of all reasons: our patients demand it of us. They have forced us to become magicians and have endowed us with super-mundane powers. And our defence would have been a just one for we ourselves—unless we happen to belong to that small coterie of doctors that is dazzled by its own learning—realise how little we know. Only on the rarest of occasions dare we confess this to our patients, not merely because by so doing we would lose them, but because faith is the most important item in their cure. For this reason therefore we are forced to assume a knowledge that we do not possess, and to manifest a confidence in our treatment that we are very far from feeling.

In the privacy of our homes, however, and strictly amongst ourselves we can whisper the unguarded truth. Our ignorance of the working of the human body is appalling! We know as little of its functioning as would mechanics who looked under the bonnet of a car without realising that such a force as electricity existed, and that it played a part in the working of the engine. A few simple breakages may come within our understanding but a whole range of activity lies completely outside our comprehension. We are studying a piece of intricate machinery ignorant of some of the fundamental principles that underlie its construction. We are attempting to mend what we do not in the least understand.

* * *

Present-day medicine is suffering from a plethora of facts and a deficiency of comprehension. We have collected so many isolated observations that we can find no connexion between them. Our industrious specialists know everything about nothing, but nothing about everything. They are like the art connoisseurs of the Victorian age making the round of the academy with their magnifying glasses. With their eyes glued to the corner of a picture these critics would go into raptures over the painting of a single flower. Caught up in some such tiny detail the meaning of the picture itself was lost.

Well, this may be so, but there's nothing new in that protest my critics. This is the way that science progresses; first the gathering together of disjointed observations, then their synthesis within the grasp of an all-embracing theory. Thus has human knowledge advanced since the dawn of time. The isolated labourers first gather in heaps the material and then arrives the master mind, the Newton, the Michael Faraday, the Pasteur to trace a pattern in what before was dire confusion.

Let me confess my doubts. I am filled with a fear that in the case of modern medicine this long-waited-for messiah will never arrive. He has tarried too long and will reach us too late. The departmentalising of our knowledge has proceeded at such a pace that it will require a superman to reduce this vast mêlée of observations to some semblance of order, some beginning of a plan. And there are few supermen.

* * *

So, Messrs. Shaw and Cronin, you will find us easy game. The garment of our knowledge is as patched as is our virtue. Yet even in Harley-street some shreds of honour and conscience may remain. Witness that nice old gentleman from the country returning to his garden and his dogs. He's caught his train by now, and I've lost my hundred guineas.

THE LANCET 100 YEARS AGO

October 7th, 1837, p. 57.

From a report of a meeting of the "British Medical Association," which, founded in 1836 for the furtherance of medical reform, died a natural death after some ten years of useful life, its name being subsequently assumed by the Provincial Medical Association.

To the Honourable the Commons of the United Kingdom of Great Britain and Ireland in Parliament assembled. The humble petition of the undersigned, President and Members of the British Medical Association and others, Sheweth, That, in the opinion of your Petitioners, the present state of medical education and of medical government call for the serious attention of your Honourable House. That, although it is now generally admitted, and is the firm conviction of your Petitioners, that the various branches of medicine and surgery are one and indivisible, that they constitute but one science, yet there are in the United Kingdom not less than sixteen or seventeen colleges, faculties, or corporations, having the power of granting degrees or licences, or having *curricula* requiring different qualifications, and none having the power of conferring the right to practice in every part of the kingdom. That this want of uniformity in the education of medical practitioners by the various universities and colleges creates jealousies and discontents among graduates and licentiates of those bodies, which are very injurious to the students, and, from an imperfect knowledge in the public mind of the principles of medical education, tend to bring the science of medicine into disrepute, by engendering a feeling that difference of education produces a corresponding difference in practice. . . . That your Petitioners, . . . having duly considered the foregoing inconsistencies, anomalies, and grievances, . . . humbly pray that a Bill may be passed by your Honourable House, directing the union of the three branches of the profession into one faculty or national institution of medicine, all the members of which shall be educated and examined alike, and possess equal rights, privileges, and immunities; that they shall be called by the same name or title, but be allowed to practise either the whole or any part of the science of medicine. That a *senatus* or governing body be elected at defined intervals by the whole of the members of the faculty, and that such *senatus* be empowered to make and enforce the observance of such laws for the government of the members as it may, from time to time, deem meet; and that it may possess power to confer degrees and to grant licences to practise in all parts of the United Kingdom. That a register may be made of all persons now practising the science of medicine, and that from and after a certain day to be appointed by your Honourable House, no person whose name shall not be in such register, be permitted to practise, or call himself by the name or title to be applied to all recognised members of the faculty, under a severe penalty. . . . And that, as in duty bound, your Petitioners will ever pray.

From a speech at the dinner following the meeting.

From the National Faculty, a National Board of Health might be appointed, to constitute a Medical Police of the country, and regulate many matters which are now neglected, or very imperfectly attended to. The public health would embrace several heads; medical attendance on the poor; coroner's inquests; the quarantine laws; inquiries into epidemics; the abatement of nuisances; the investigation of certain accidents; the sale of poisons and quack medicines; medical evidence in trials for murder; the regulation of hospitals; medical education; madhouses; prisons; public museums and libraries connected with medicine; chemists and druggists; the registration of births and deaths; the institution of a benevolent or pension fund; and many other matters. . . .

CORRESPONDENCE

HEALTH OF MEDICAL STUDENTS

To the Editor of THE LANCET

SIR,—My attention has been drawn to the correspondence in your columns regarding the health of medical students. At the present time a good deal of thought is being given to the question of health of all students in our universities. About four years ago a preliminary report on university health services was produced by the National Union of Students and the recent report issued by the University Grants' Committee contains some valuable references to this subject. The problem is a particularly important one in a university where only a proportion of the students are in residence and in the hope that the information may be helpful to others I submit an outline of a scheme for an institute for recreation and physical education which is under consideration at this university.

In spite of additional playing fields which have been secured in recent years it was felt that something more was required, particularly for those who are unable or unwilling to make use of our grounds at Fallowfield and Wythenshawe, and also with the object of improving the physical well-being of our students. Many of the students making the greatest effort to use the teaching facilities of the university to the fullest extent are those who need most opportunities for recreation and physical training close at hand. Our gymnasium is unfortunately inadequate for the present numbers and for some time it has been felt necessary to provide wider opportunities upon the main university site. Realising the need and value of such facilities our deputy treasurer, Sir Robert McDougall, has recently presented to the university the drill hall, which was formerly the headquarters of the 7th Manchester territorial battalion, together with an adjoining piece of land. This site is only about two hundred yards from the main buildings and therefore conveniently situated. Since the main hall is 165 ft. by 85 ft., and there are on the front and west side a series of rooms of varying size on two floors, the architects find it possible to provide a swimming bath with dressing-rooms and shower baths, accommodation for the O.T.C., and ample floor space for physical education. This floor space would be available for at least two badminton courts when it was not required for physical training. It is hoped, if the necessary financial help is forthcoming, to provide in another building on the site two squash courts, two fives courts, and a room for fencing. The adjoining ground will give adequate opportunities for physical training and exercise in the open air, when weather permits.

The scheme is as yet in an early stage but it is much hoped that it will be closely associated with our medical school, which will supply the necessary medical supervision and that ultimately it may be possible to develop a complete physical training department.—I am, Sir, yours faithfully,

JOHN S. B. STOPFORD,
Vice-Chancellor, The University of Manchester.

Sept. 30th.

LATENT SYPHILIS

To the Editor of THE LANCET

SIR,—The annotation in your last issue is a welcome reminder to all in practice of the varied garb worn by this disorder. Cannon's cases were however all serologically positive, and the diagnosis rested on this fact; whereas syphilologists have repeatedly called attention to the high percentage of negative sera in this group, the latest to do so being Lees in the current *Practitioner*. The diagnosis must therefore be made on grounds other than serum tests, and the only worthy foundation is morbid anatomy. We know that the spirochæte is swept into the lymphatic system at the onset of the latent period whence it emerges to produce symptoms which, at present, are only recognised when they are gross. All stages of development of aortitis and aneurysm have now been demonstrated and accepted, but this is not true of any other of the protean manifestations of the disease. If however the immediate anatomical relations of the aorta, chief of which is the sympathetic chain, are similarly affected the symptoms will indeed be protean and manifest in remote organs controlled by that chain.

I have the authority of L. W. Harrison for saying that there was recently no research into this branch of clinical medicine, and I beg the publicity of your columns to appeal to those who direct research to remove this anomaly. The question is simple. Does the process responsible for aneurysm affect the sympathetic chain, or does it not? If it does, what symptoms are to be expected? I believe that clinicians will readily complete the picture.

I am, Sir, yours faithfully,

Caernarvon, Oct. 4th. GRIFFITH EVANS.

REGISTERED MASSEURS

To the Editor of THE LANCET

SIR,—I should like to take this opportunity of expressing, on behalf of the Chartered Society of Massage and Medical Gymnastics, sincere thanks to Mr. H. H. Greenwood for his letter which appeared in your issue of Sept. 25th, and for his support of the interests of chartered masseuses and masseurs.

I regret that the list of members of the society, which is published among the advertisement pages of the Medical Directory, should have proved to be misleading. In fairness to the publishers of the Medical Directory it must be stated that an arrangement was made as long ago as 1929 whereby members of the Chartered Society, who wished to do so, could pay a requisite fee, and have published in the advertisement pages of the Medical Directory their names together with the treatments they were willing to undertake. The form of announcement was approved by the Council, subject to the list of "treatments undertaken" being accepted as a personal statement of the individual for which the Council took no responsibility.

As much publicity as possible was given to our members of this arrangement at the time, and subsequently every year in the "official notices to members" published in the Society's *Journal*. Naturally, it is a cause for regret that any medical practitioner could have considered that a list of approximately 120 names should represent the full register of the members of a society which numbers roughly 11,000. Also, in spite of the list having appeared in the Medical Directory approximately in the same position and in the same form for eight years in succession, no one has hitherto drawn the attention of the Society to the fact that this advertising by individual members in a medical publication might lead to confusion. I fancy, therefore, that we may consider that the misunderstanding under discussion can only be a very rare one amongst

medical men as a whole. Indeed, I hope it has been unique.

The publication and regular distribution to all medical practitioners of the register of the Board of Registration of Medical Auxiliaries, and later, we hope, of local directories of those whose names appear on this register, will surely make any future misunderstanding impossible. I can only deplore that it has now been presented—obviously for reply—though I am most grateful for the opportunity thus afforded of doing so.

Should some of our members continue to advertise as heretofore in the Medical Directory, I have little doubt that the publishers will allow the insertion of a note which will effectively prevent any possibility of further misunderstanding.

I am, Sir, yours faithfully,

JAMES MENNELL,
Chairman of the Council of the C.S.M.M.G.

Sept. 28th.

ROAD ACCIDENTS AS A PROBLEM OF PREVENTIVE MEDICINE

To the Editor of THE LANCET

SIR,—The fact that road accidents have continued to increase in spite of recent legislation and that the yearly total of casualties is comparable to those of a war of considerable magnitude, prompts me to raise the question as to how far they should be considered as a problem of preventive medicine.

The increase of traffic, both in volume and speed, is such as to call for special qualities of skill and judgment on the part of drivers unless the increase is to continue. In aviation, the need for medical examination of candidates for flying instruction has been recognised from the early days, to ensure the absence of visual defects, organic disease, and other disabling conditions. Driving a motor vehicle on the crowded roads of to-day demands concentrated attention, care, quick decision in the face of dilemma, and considerable power of endurance. It imposes a strain of which the individual himself is not always conscious, nor can he readily appreciate in himself the effects of fatigue.

In the absence, hitherto, of a medical examination and of statistics as to the proportion of accidents due to the human factor, it is not possible even to guess as to how far unfitness plays a part. It is probable that many doctors are aware of persons who drive regularly, and are the subjects of organic disease. I know of a man who is the subject of a mild diabetes and has cataract in both eyes. He is practically blind in the left and has only very limited vision in the right. His daughter consulted me without his knowledge, saying that he will not let her drive, but insists on her accompanying him. He has had a number of minor accidents, many near escapes, and on more than one occasion has probably owed his escape to the vigilant prompting of his daughter. Another case was that of a garage proprietor whom I had seen for advanced aortic disease and auricular fibrillation who could only go upstairs with considerable distress. He regularly used to drive a private coach on trips to the seaside and races, and apparently had no difficulty in getting his licence renewed.

It seems to me that the need for medical examination of applicants for licences, either ab initio or renewal, is long overdue. Such examination need not be very searching. I would suggest that each candidate should make a declaration on a printed form that he is not subject, as far as he is aware, to attacks of epilepsy, angina pectoris, or other paroxysmal disease. The examination itself should include (*a*) a general inspection for physical deformity and loss of function such as would prevent the driving and proper control of a car; (*b*) vision; (*c*) organic disease of the circulatory system, including arterio-sclerosis and hyperpiesis; (*d*) nervous system, especially as regards tremor, and exaggerated reflexes. Whether the doctor should be called upon to express an opinion as to any evidence of the habitual abuse of alcohol is a matter for consideration. The examination should not be carried out by the candidate's regular medical attendant, and the cost should be borne by the applicant.

Personally I have little doubt that "temperamental unfitness for driving a car" is probably responsible for more accidents than physical unfitness; but it is less easy to assess by the general practitioner. Moreover the expense and administrative difficulties of requiring a psychological investigation in the case of every candidate would be insuperable. The difficulty could be met by giving every licence-holder an "accident allowance" of, say, three accidents during the currency of his licence. The licence form should contain a space in which the fact and date of involvement in an accident could be recorded by the police. Involvement in three accidents would automatically suspend the licence which would be confiscated by the police pending the production of a certificate of fitness given by a medical man, who should not be the holder's own doctor. Two such suspensions within the currency of a single licence—i.e., six accidents—should require examination by a medical board, one member of which should be a psychologist. The nature of such an examination should be set out on a printed form and the board should make a recommendation as to fitness or otherwise to hold a licence.

Introduction of legislation on these lines would doubtless provoke a great outcry at first; but the ultimate result would be the elimination of persons unfit to drive and the exhibition of considerably greater care on the part of all. With a falling birth-rate the country cannot afford the present enormous losses. Governments are apparently reluctant to introduce legislation which might jeopardise their popularity with the electorate; but surely such casualty lists put the matter above political considerations.

As a motorist of many years' standing it is my own opinion that the imposition of a speed limit is very little use. It is possible with modern cars to drive fast quite safely, and in most places where speeds are restricted traffic conditions impose their own limitations.—I am, Sir, yours faithfully,

H. M. STANLEY TURNER,
Wing Commander.

London, W., Oct. 4th.

IDENTICAL TWINS

To the Editor of THE LANCET

SIR,—The comment in your issue of Sept. 4th on the study of twins by Newman, Freeman, and Holzinger suggests that criticism of their book must be based primarily on the criteria they use for the establishment of monozygotism. I have now twins under my care at the psychological clinic of the Queen's Hospital for Children, and I have tried to investigate whether they were monozygotic or dizygotic. The midwife and grandmother, who were present at the confinement, report the emergence of one placenta only. Siemens places no reliance on the presence of one placenta or one chorion. He has evolved a scheme for differentiating the two types which, as Stocks rightly points out, has no measurements, and hence the personal equation of the

observer is a factor. Stocks relies on fingerprints and certain anthropometric measurements. Case 18 in Newman, Freeman, and Holzinger's book does not come up to the criterion adopted by Stocks on fingerprint similarity required for monozygotism. None of these investigators mentions blood groups excepting Siemens who apparently deems them to be of minor importance, since he does not use them in his case records. Dr. Denys Jennings in THE LANCET of March 13th, p. 660, refers to the accuracy of the methods used by the Kaiser-Wilhelm Institut für Anthropologie in investigating twins, and it seems to me that we cannot hope to get further until such methods are adopted. Prof. Newman has noted the lack of information derived from cases under operation where there is opportunity to observe the number of corpora lutea present. I think that many obstetricians consider one placenta to be proof of monozygotism; perhaps they would be interested enough to supply evidence in support of this thesis.

I am, Sir, yours faithfully,

Regent's Park, N.W. Oct. 2nd. IRENE YATES.

RADIODERMATITIS AND CANCER

To the Editor of THE LANCET

SIR,—In an annotation last week (p. 812) you say "... we recognise that soft rays encourage malignant growth while hard ones counteract it." Is it really so simple as all that? If so, how explain the excellent results in skin cancer which are obtained by the Chaoul tube, working at only 60,000 volts. At a discussion on the subject of specificity of wave-length at the June meeting in London of the British Association of Radiologists—a discussion in which the heads of various radium institutes took part—only one speaker out of half a dozen expressed belief in the specific action of hard rays.

I am, Sir, yours faithfully,

F. HERNAMAN-JOHNSON.

Brook-street, W., Oct. 4th.

DEAFNESS: PREVENTION VERSUS PALLIATION

To the Editor of THE LANCET

SIR,—I should like to congratulate Mr. Tumarkin upon his paper with the above title. I have been preaching prevention to my brother otologists for over thirty years but without appreciable results, most of their ears being probably sclerosed by chronic tradition. I sincerely trust Mr. Tumarkin will receive his reward in this world, although I may tell him that the mens conscia recti is at least spiritually sustaining. I am, Sir, yours faithfully,

MACLEOD YEARSLEY.

Wimpole-street, W., Oct. 5th.

NASAL SINUSITIS IN CHILDHOOD

To the Editor of THE LANCET

SIR,—In Mr. Ivor Griffiths's article upon the function of the tonsils and nasal catarrh, published in your issue of Sept. 25th, I find much with which I am in accord. No one who has read my work upon sinusitis [1] could think that I do not hold the sinuses responsible for much. But I feel that in questioning the value of removal of the tonsils and adenoids in otitis media, because he has seen many children who have had this operation performed and still have inflammation of the ear, Mr. Griffiths is discouraging a means of treatment which has not received, even yet, the recognition it merits. I still see many patients at hospital with chronic or recurrent otitis, where the tonsils and adenoids are present: and I still see recovery following the operation in such instances. Of course if sinusitis is the cause of the otitis the treatment is of the sinuses. Likewise I fear lest his statement that sinusitis is more common in people who have had their tonsils and adenoids removed should be interpreted to mean that those who have had their tonsils and adenoids removed are more liable to sinusitis. As I have written, and as Mr. Griffiths himself is obviously aware, the tonsils and adenoids are often removed in a misdirected attempt to cure the symptoms of sinusitis.

My anxiety that these facts should be fairly stated is increased by finding his work quoted at length in the lay press, with my name in support.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 4th. JAMES CROOKS.

[1] Nasal Accessory Sinusitis in Children, *Arch. Dis. Child.* 1936, **11**, 281.

MEAL-TIME POLEMICS

To the Editor of THE LANCET

SIR,—The brief account which you published in your last issue (p. 814) of the conference on tuberculosis at Lisbon does not mention an incident which occurred at the last meeting of members, and which has aroused indignation amongst those who were attending from this country, America, and France especially. It must be a matter for serious consideration by the executive committee of the International Union as to whether anything is to be gained by allowing individual members to speak, uninvited, at the final dinner of the assembly on questions of purely political significance. The sight of medical specialists embracing each other in political fervour is not at any time particularly convincing; it is merely repugnant to those who may not share their views. The same manifestation at a banquet in this country given under international auspices would be regarded as a breach of hospitality. Let us hope that some guarantee may be forthcoming from the Union that reasonable steps will be taken to prevent the recurrence of such an incident at the Berlin meeting in 1939, and that such differences of opinion as may exist amongst delegates will be confined, in public at least, to the special problems on the official medical agenda. I am, Sir, yours faithfully,

JOHN B. MCDOUGALL.

British Legion Village, Preston Hall, Kent, Oct. 4th.

BRUCEA SUMATRANA IN AMŒBIC DYSENTERY

To the Editor of THE LANCET

SIR,—In connexion with the annotation in your last issue under the heading A New Specific for Amœbic Dysentery, your readers may be interested to refer to a paper read before the British Pharmaceutical Conference at Bristol thirty-two years ago (*Pharm. J.* August 1st, 1905). The paper describes in detail the original investigations by Power and Lees to which Dr. Liu Hsiao-Liang refers in the *Chinese Medical Journal*. These original investigations of Kô-sam seeds were carried out at the Wellcome Chemical Research Laboratories and as a result in 1907 we prepared and issued "Tabloid" Kô-sam, each product representing 0·2 gramme of Kô-sam seeds (*Brucea sumatrana*, Roxb.).

We are, Sir, yours faithfully,

Oct. 5th. BURROUGHS WELLCOME AND CO.

RELIEF OF DISTRESS IN CHINA

A LETTER reaches us, signed by the Archbishops of Canterbury and York together with many leaders of the civil and religious life of this country, announcing the opening of a fund for the relief of distress

in China. This fund, which is being opened jointly by the committee of the China Association, the British Red Cross Society, and the Conference of British Missionary Societies, will be administered in China by an organisation constituted under the presidency of H.M. Ambassador, with the Governor of Hong-Kong as vice-president. The letter continues:

"We have been moved to take this decision, and we base our appeal for contributions, upon the broad, human ground that the conflict is occasioning terrible suffering in all its forms amongst untold numbers of Chinese. The total of those rendered destitute is immense. Reliable figures cabled to the China Association from Shanghai show that 100,000 completely destitute refugees are being maintained in camps in the Shanghai area alone, while help is also being given in various forms to another 100,000 in that district. Some 250,000 have been moved away from Shanghai by boat and train, but they are being rapidly replaced, the estimated total of destitute Chinese for whom Shanghai will have to provide in the near future being 500,000. Tientsin, Peiping, Hankow, Canton, and many other centres are faced by similar problems. British national societies and firms are doing their utmost to help, but their resources, already crippled by the disorganisation of trade, are quite inadequate. There is a desperate shortage at all centres of essential hospital equipment, including anæsthetics and antiseptics, the lack of which is resulting in suffering too hideous to describe. The resources of British hospitals are breaking down under the strain of emergency service, while there are also British subjects in urgent need of help.

"The care of sick and wounded members of the fighting forces will be the special interest of the British Red Cross Society, which is already acting in coöperation with the Chinese Red Cross Society."

Contributions may be sent to the China Association (161, Shell-Mex House, London, W.C.2), the Conference of British Missionary Societies (2, Eaton-gate, S.W.1), or the British Red Cross Society (14, Grosvenor-crescent, S.W.1). Mr. F. C. Davies, secretary of the British Red Cross Society, is among those to whom inquiries may be addressed.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Rear-Admiral T. Creaser to *Victory* as Medical Officer in Charge, R.N. Hospital, Haslar.

Surg. Capt. F. C. Wright, from the R.N. Hospital, Plymouth, whose promotion was noted in THE LANCET of July 10th last, has been appointed to command the hospital ship *Maine* (in succession to Surg. Capt. W. Bradbury, C.B.E., D.S.O., who has held this command for over two years).

Surg. Comdr. W. E. Heath is placed on the Retd. List.

Surg. Lt.-Comdr. R. C. Foster to be Surg. Comdr.

Surg. Lt. H. de B. Kempthorne to be Surg. Lt.-Comdr.

P. H. K. Gray, W. J. Latham, R. McM. Latta, R. E. Lauder, E. B. Martin, D. Martyn, J. H. Mitchell, K. J. O'Connor, W. V. Owen, V. J. R. Sheridan, and B. W. Walford to be Surg. Lts. for short service and appointed to *Victory* for R.N. Hospital, Haslar, for course.

Surg. Lt. R. F. Stenhouse transferred to Emergency List.

Surg. Lt. A. P. C. Clark to *Pembroke* for R.N.B.

Admiralty Surgeon and Agents: Mr. S. S. Rendall, Boston, Lincs; Mr. H. M. Gilbertson, Hitchin; Mr. A. M. Henry, Chelmsford; and Mr. S. J. Hadfield, Beer, East Devon.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdrs. C. Mason to *Drake* for R.N.B., and J. E. L. Morris to *Pembroke* for R.N.B.

Surg. Lt. M. G. McLean to *Drake* for R.N.B.

ARMY MEDICAL SERVICES

Cols. retiring on retd. pay: R. M. Dickson, O.B.E., M.D., late R.A.M.C., and L. V. Thurston, D.S.O., late R.A.M.C.

Lt.-Cols. to be Cols.: A. D. Stirling, D.S.O., from R.A.M.C., and O. W. McSheehy, D.S.O., O.B.E., from R.A.M.C.

ROYAL ARMY MEDICAL CORPS

Maj. D. G. Evans retires on retd. pay.

Majs. to be Lt.-Cols.: R. A. Austin, M.C., and A. L. Robb.

Short Service Commission: Lt. A. B. Dempsey to be Capt.

ARMY DENTAL CORPS

Short Service Commission: J. McNamara to be Lt. (on prob.).

TERRITORIAL ARMY

Col. W. E. Hume, C.M.G. (ret. T.A.), to be Hon. Col. R.A.M.C. Units, 50th (Northumbrian) Div.

Maj. F. J. Morris, M.C., to be Lt.-Col.

Capt. G. P. Smith resigns his commn. on appt. to the R.A.F. Vol. Res.

Maj. D. McVicker, M.C. (Res. of Off.), to be Maj.

ROYAL AIR FORCE

Group Capt. F. N. B. Smartt to Central Medical Establishment for duty as President, No. 2 Medical Board.

Wing Comdr. B. F. Haythornthwaite to Headquarters, Coastal Command, Lee-on-the-Solent, for duty as Deputy Principal Medical Officer (Hygiene), vice S./Comdr. V. S. Ewing.

Squadron Leader J. MacC. Kilpatrick to Special Duty List for duty at Chemical Defence Experimental Station, Porton.

Flight Lts. I. Mackay to R.A.F. Institute of Pathology and Tropical Medicine, Halton; A. W. Callaghan to R.A.F. Station, Abingdon; J. S. Carslaw to Medical Training Depôt, Halton; H. D. Conway to R.A.F. Station, Upwood; H. L. Willcox to R.A.F. Station, Calshot; C. A. Rumball to R.A.F. Hospital, Cranwell; and C. M. Carlyle-Gall to R.A.F. Station, Aldergrove.

Flying Offrs.: The following are posted to Medical Training Depôt, Halton, on appointment to short service commissions for three years on the active list: B. G. Haynes, N. Mackenzie, F. G. Ryan, and R. L. Scott.

Flying Offr. R. M. Hewat to Special Duty List, on appointment to a short service commission (while holding a house appointment at St. Mary's Hospital).

Dental Branch.—Flight Lt. D. I. Malcomson to R.A.F. Depôt, Henlow.

Flying Offrs.: The following are posted to Medical Training Depôt, Halton, on appointment to non-permanent commissions for three years on the active list: G. W. Hargreaves and N. L. Newman.

INDIAN MEDICAL SERVICE

Lt.-Col. R. de S. B. Herrick, D.S.O., retires.

Capt. C. K. Byrnes relinquishes his prob. appointment.

Lt. (on prob.) W. A. Hopkins is restd. to the estbt.

Indian Medical Department.—Asst. Surg. (1st Cl.) to be Lt. (Sen. Asst. Surg.): A. C. Sinclair.

DEATHS IN THE SERVICES

Colonel GERRARD WILLIAM TATE, A.M.S., who died on Oct. 3rd at St. Leonards-on-Sea, was born in Dublin in 1866 and was educated at Trinity College where he qualified in 1889, later taking the D.P.H. and the Liverpool diploma in tropical medicine. Entering the R.A.M.C., he served in Sierra Leone, 1898–99 (medal with clasp), in the South African War, 1901–02 (Queen's medal with five clasps), and in the European War, becoming acting colonel in 1916. He was created D.S.O. in 1917 and C.M.G. in 1918, and retired in 1919.

OBITUARY

JAMES MACPHERSON LAWRIE, M.D. Glasg.

Dr. Lawrie, who died in a London nursing-home on Sept. 18th at the age of 81, spent his professional life at Weymouth, retiring in 1920 to live in London. Qualifying in 1881 at Glasgow University, with medals in anatomy and physiology, and holding resident appointments in several hospitals there, he took the L.M. Dubl. in 1883 and went to Weymouth to assist Dr. W. J. Smith at the old Weymouth Sanatorium which he had founded, taking full charge after his death two years later. At this time he was specially interested in diseases of women and joined the British Gynæcological Society, of which later he became vice-president. It was entirely due to his effort that money was raised to make this hospital into something more worthy of an important health resort, and in 1901 was laid the foundation-stone of the Princess Christian Hospital which took its place, and which 20 years later absorbed the Royal Hospital. Of this hospital he became senior physician. During the war it was placed at the disposal of the War Office along with four affiliated Red Cross hospitals organised by his wife. He also superintended the volunteer transport corps. Dr. Lawrie held many public appointments in the town; he became county magistrate in 1889, a member of the first Dorset county council in 1892, and a deputy lieutenant in 1906. He was chairman of the bench for 20 years. In 1924 the freedom of the borough of Weymouth was conferred on him. He married Annie, daughter of the Rev. Samuel Johnson Smith, of Smithborough, and leaves two sons and three daughters. His eldest daughter married his partner, Mr. T. H. Sanderson-Wells, and his youngest son is on the staff of Queen Mary's Hospital for the East End.

DR. CARL SPENGLER

THE death of Dr. Carl Spengler at Davos in his 78th year removes the last link of a remarkable family association. He was the younger of the two sons of Alexander Spengler and Elisabeth Ambühl, and attended the village school, going on from there to the cantonal school in Chur, and later to the Universities of Zürich and Heidelberg. For some years he held a medical assistantship at Strasbourg, and then returned to Davos-Platz to help his father, a year or two after his brother had gone through much the same preparation. The difference between the two brothers then became apparent, because while Lucius became a pure clinician, basing his work almost entirely on his observation of patients, Carl developed an interest in experimental methods. He went to Berlin to assist Robert Koch in the early tuberculin epoch, and after his return he devised a bovine tuberculin for use in pulmonary tuberculosis which avoided the violent reactions of the older tuberculin. He went on to devise other immunising substances, and finally staked his reputation on the efficacy of an immune body to be found in red corpuscles which was known as *Immunkörper* (I.K.). Latterly his attention had turned towards methods for the conquest of cancer. It was hardly his fault that he lived in an age when the correlation between treatment and results was not submitted to a censorship as strict as it is now; he seemed to pass rather readily from success in one method to equal success in another method. Moreover he possessed in high degree the faculty of exciting, both in his patients and in his assistants, an uncritical confidence. Time will show how much of his work will remain; his contemporaries are witnesses of the influence he exerted in his time.

MEDICAL NEWS

HOSPITAL DINNERS

At **St. Bartholomew's** 127 old students and guests sat down on Oct. 1st in the new College Hall in Charterhouse-square, when Dr. C. M. Hinds Howell presided. The toast of The Medical College was proposed in a racy speech by Mr. G. E. Palmer, M.P. for Winchester, who congratulated his hearers on the increased expectation of life, due no doubt to medical effort, but he still wanted to know: Why does man behave as he does? Dr. Howell, in replying, joined the hospital and college, so closely knit (he said) that neither can stand alone, and answered Mr. Palmer's question with some fulness about why he behaved as he did at both. The year, he said, had been an unusually full one, its chief event being the opening in July of the new medical block, distinguished by its dignity and simplicity. He also recalled Mrs. Meyer Sassoon's gift of a high voltage X ray machine. Lord Stanmore had resigned the treasurership after 16 years in which he had given much time and thought to hospital affairs, and they were also losing Mr. Hayes, clerk to the governors, who during 32 years had endeared himself to all by his personality. Turning to staff changes he noted that Dr. Gow on retirement had become the father of most attractive twins; no senior physician of St. Bart.'s, he said, had before achieved such distinction. Mr. Elmslie's wise counsel would be missed; he had been the first specialist orthopædic surgeon on the hospital staff. Prof. Woollard, who had been seduced by University College Hospital, was succeeded by Prof. Hamilton. Mr. Girling Ball having become dean of the faculty of medicine in the University of London, their grant this year had been increased by £3000, which might (or might not) be a coincidence. Dr. Robb-Smith had gone to Oxford as assistant director of pathology; he and Dr. Magnus had taken two of the only three gold medals awarded since the London M.D. in Pathology was started. Dr. Charles Harris was succeeding Mr. Vick as warden. Work was now in full swing at the College, whose existence was a lasting memorial to the enterprise and energy of Mr. Girling Ball, but they still owed £60,000 of which only £40,00 was in sight. They wanted the same amount of money for a residential college, the same again for the endowment of research, and quite urgently for a private patients' block, being now the only large teaching hospital without one. Here, he said, was ample scope for some wealthy benefactor. Mr. Vick proposed The Guests, among whom were five masters of City companies, and Mr. George Aylwin, acting treasurer, replied. Mr. Foster Moore proposed the Chairman, and the time being still early the company settled down to general conversation.

Charing Cross.—This dinner, held at the Café Royal on Oct. 2nd, was essentially a domestic gathering, for Lord Addison, who presided, was once a member of the teaching staff, and Mr. H. L. Eason, the guest of honour, is now principal of the university to which the students mostly belong. Lord Addison, proposing the toast of Charing Cross hospital and school, claimed for anatomy, which it was now the fashion to belittle, the honour of supplying the first two medical men to enter the Cabinet; the common sense imparted by a medical training was, he maintained, a great asset in public life. He described graphically the birth pangs of the Ministry of Health and the spontaneous generation of the Medical Research Council, with pardonable pride in their development and present stature; and he saw coming the day when all hospitals would be part of a great scheme of public service without losing the independence that was the strength of the British voluntary system. Mr. Inman hinted

mysteriously that since the scheme for rebuilding on the Adelphi site had been withered in its infancy by a cold blast, another ambitious plan would be sheltered from criticism until it had grown more robust. Dr. E. C. Warner brought grace and humour to his toast of the Guests and Mr. Eason, responding, showed that though he has forsaken the cult of physical for that of academic vision, he will not fail to keep this focused on the medical faculty, in which the University of London has cause for special pride. Mr. E. D. Davies recalled many happy associations with Lord Addison and assured him that his interest in the basic principles of medical study was shared by members of the school, who had strong hopes of being able to resume the teaching of the pre-clinical subjects. In the course of the evening Mr. E. A. Crook, the dean, announced that Princess Louise, president of the hospital, would distribute the prizes to students on Oct. 25th. The impression left on the few outsiders at this family party was that of vigorous growth and confidence in the future prosperity of the hospital and school.

St. George's.—Mr. Ivor Back presided on Oct. 2nd at the medical school dinner held at the May Fair Hotel; this was the last occasion on which he will attend as a member of the active staff of the hospital, and there was feeling allusion to this fact. Dr. R. Salisbury Woods, who proposed the Hospital and Medical School, found many causes of satisfaction in being a St. George's man—the Hunter tradition, the high proportion of beds to student, the personal attention, the amazing friendliness. He was glad to know that the "Corner" will remain at the corner, and even if obliged to face sideways, he said, may St. George's never look back. Mr. M. F. Nicholls replied for the first time as dean, gracefully acknowledging the ten years' service of his predecessor, Dr. Feiling. There being no official toast for the guests, he mentioned the presence of Dr. W. R. Halliday, principal of King's College, of Lord Greville, treasurer of the hospital, of Sir James Hartigan, director-general of Army Medical Services, and of the chairman of the Voluntary Hospitals' Committee, Mr. Oliver N. Chadwyck-Healey. He spoke of new acquisitions on the staff—Dr. McNair Scott and Sir Frederick Hobday, lecturer on comparative medicine—and provision for research, particularly in industrial disease under the tutelage of Dr. J. C. Bridge. There was more than the average entry; they had in fact as many students as they could cope with and 40 old students were attending the post-graduate course. When the new hospital was built it was not intended to enlarge the medical school very much, perhaps from 80 to 100 places; the aim would rather be to give a first-class training and to maintain the existing personal relations. Dr. H. Gainsborough, proposing The Chairman, fell away repeatedly from his subject to give an account of the progress of the new building scheme. He deprecated any hurry; of all buildings a hospital required the most careful working out for successful coöperation amongst all its units. Not until June of next year would the architect be selected and building would not begin before the end of 1939, after a year of hard work to consider all the requirements. It would not be finished before 1943 or 1944. Plan slowly and build quickly, that was his message. Mr. Back disclaimed for himself the original idea of rebuilding the hospital; it arose much earlier from the congestion of the special departments. A magnificent donation had now made it possible to build it in two parts instead of in three, and when completed he hoped that Steell's statue of John Hunter now over the door of the medical school might still be in a position to be seen by the great public. "I am shortly leaving the active staff of St. George's, but I shall send up a small prayer (which I very rarely do) for its happiness and prosperity."

St. Mary's.—The policy of having few and brief speeches and ample time for renewing friendships, apparent in the last two or three annual dinners of this medical school, was held by Mr. V. Zachary Cope, the chairman, to be responsible for the large attendance this year at Claridge's Hotel on Oct. 2nd. The toast of The Medical School was proposed by Mr. Lloyd Owen. He said he had been instructed to say anything he liked about anyone he liked, but he must hand out no bouquets. He could not refrain, however, from expressing his admiration for what the dean had done. The outward and visible signs were the rebuilding of the medical school and the new athletic ground at Teddington, first used that afternoon by the rugby fifteen. The hospital too had not been idle, owing largely to Colonel W. Parkes's efforts. With the new nurses' home and the pay-block the street now held other things than Paddington station and a string of contraceptive shops. Lastly, through Mr. Edward Meyerstein's generosity, they now had a well-equipped dental research laboratory. Dr. C. M. Wilson, the dean, responding, said that his office should be scheduled among the dangerous trades. If "horas non numero nisi serenas" were true, his life would indeed be short. The administration of a medical school had become a highly competitive business—and as such it succeeded or failed by its policy. In 1920 he had had the unhappy thought that something must be done about the schoolboy who after a healthy vigorous life was dumped down to live in an unsalubrious London street. This brought forth vehement protests against the policy. Then, the cry was that there was too much sport; now it is that there is not enough. That exercise was essential to a sane outlook was to-day the politician's creed and they were once more in the fashion. He concluded by proposing the health of the chairman. Mr. Cope, responding, said that St. Mary's was on the crest of a great wave, but they should not forget to take stock of their position. The future held many problems. He was sure that the State was going to play an increasing part in all their doings—in the schools as well as in the hospitals, but they would weather the storm and emerge united and strengthened. At the suggestion of the chairman a message was sent to Sir Almroth Wright, wishing him a speedy recovery from his recent illness.

Middlesex.—As chairman at the Savoy on Oct. 1st Dr. Douglas McAlpine fittingly began his speech by speaking of Bland-Sutton. He also expressed the affection and admiration felt for two retiring members of the staff, Dr. R. A. Young and Mr. Sampson Handley, and the welcome given to their successors Dr. H. L. Marriott and Mr. P. B. Ascroft, and to Dr. Frank Howitt, newly appointed to charge of the department of physical medicine. Mr. R. C. Davis, chairman of the medical school finance committee, said that the school flourishes, and the junior common-room is loaded with cups. Much of the flourishing, he held, was due to Dr. H. E. A. Boldero's labours as dean; and appreciation of these labours was evident when Dr. Boldero, in his turn, rose to speak. But the most remarkable tribute was reserved for Prof. Thomas Yeates, now leaving the school after 22 years in the anatomical department; for (being now somewhat freed from inhibitions) the company burst into song about him in the middle of Dr. Boldero's speech. When this almost unprecedented interruption had subsided the dean went on to tell of the Rudyard Kipling fund now established to assist students or recently qualified men in danger of having to abandon their career. The school, he said, was going to enjoy to the full the 18½ acres of really good turf at Chislehurst given by Mr. Edward Meyerstein; and now that the hospital was finished he hoped that £50,000 could be found for starting on the £165,000 scheme for the medical school. Dr. E. M. Japha, as senior Broderip scholar, returned the slightly acidulated thanks proper to his office; Mr. Eric Pearce Gould, in an elegant speech, made the best of The Guests; and Dr. Evan Bedford tackled The Chairman, kindly but firmly, speaking of his enthusiasm for all the hospital's activities and especially of his fostering of neurological surgery. It was common enough, Dr. Bedford said, for the chair to be occupied by Scotsmen and by neurologists, but one had to go a long way back to reach the last example of this happy coincidence. "I refer of course to Sir Charles Bell."

The final recollection registered at the dinner was of Prof. (Work, man, Work) Yeates being carried shoulder high by a party of roughs.

Westminster.—At the Park Lane Hotel last Saturday Mr. A. F. MacCallan, the chairman, gave a glowing account of the new Westminster medical school, with its billiard-room and squash courts, not to mention its educational facilities. In the past year, he said, the dean had been obliged to refuse or defer no less than 150 applications from prospective students. Evidently it was already

realised that the new 350-bed hospital, to be finished in eighteen months' time, would be the finest small hospital in London. Unfortunately the finance committee were still awaiting the gift from some financial magnate that would relieve their present anxieties. Speaking of the changes of the past year, Mr. MacCallan referred to the death of Mr. Frank Lawrence, dental surgeon to the hospital. Making their first appearance as members of the staff were Mr. E. Stanley Lee, Mr. G. H. Macnab, and Mr. R. S. Taylor. Major-General J. W. L. Scott said it was 37 years since he entered the Westminster medical school, and conditions in the new school would be very different from what they were in his time. But the spirit of the place was the same; it was a child born of very close association between staff and students. Hesitation was often felt by parents about the best thing to do for their boys, but he had had no doubts at all, and his son was starting at Westminster Hospital this term. Mr. J. H. B. Round, secretary of the students' clubs' union, struck a sombre note when he spoke of rugger, but expressed grim determination for the future. He brightened a little at the thought of hockey, golf, and even cricket, and he claimed that no hospital in London has a more successful and conscientious medical staff. Dr. Adolphe Abrahams's speech proposing The Guests included (on slender grounds) some recollections of his own career as a hakim on a Nile steamer, when he assumed the title of Effendi and wore a tarboosh—a kindly headgear, he said, to one with my deformity. Passing lightly over Elisha and Dr. Arnold Stott—neither of whom were guests—he remarked, inter alia, that he regarded the magnificent buildings now put up by insurance companies as monuments to the skill of doctors in ensuring immortality. The Rev. the Master of the Charterhouse explained that he presided over a college of aged persons rather than a collection of young ones, and told scandalous tales of medical members of his own family. Dr. Stott, proposing The Chairman, recalled that the remarkable ophthalmic service of Egypt to-day is largely the result of Mr. MacCallan's labours. A bust of him, in bronze, had been deposited in the ophthalmic hospital in Alexandria—"that must happen to very few living men"—and since leaving Egypt and coming to Westminster he had won everybody's respect and affection.

University of London

Mr. J. B. S. Haldane, F.R.S., professor of genetics at University College, has been appointed the first Weldon professor of biometry there. The Weldon chair has been established in the University with a legacy from the widow of W. F. R. Weldon, at one time Jodrell professor of zoology at University College. Prof. Haldane will give ten lectures on biometry, beginning on Oct. 12th at 5 P.M., at the College.

Dr. Alfred Pollitt, Dr. A. G. M. Weddell, Mr. J. J. Pritchard, and Dr. R. E. Norrish have been appointed demonstrators in the department of anatomy and embryology at University College; and Mr. L. Young and Dr. D. H. Smyth lecturers in the department of physiology, pharmacology, and biochemistry.

The following lectures have been arranged: Dr. P. M. Tookey Kerridge, four lectures on the physiology of hearing and speech, beginning on Monday, Oct 11th, at 5 P.M. (at University College); Dr. A. I. Virtanen, professor of biochemistry in the Technical University of Helsingfors, three lectures on biological nitrogen fixation and the production of vitamins in agriculture, beginning on Nov. 8th at 5.30 P.M.; Prof. Raymond Pearl, professor of biology in the Johns Hopkins University School of Hygiene and Public Health, five Heath Clark lectures on the natural history of population, beginning on Oct. 27th at 5.30 P.M.; Prof. F. W. Twort, F.R.S., five lectures on a comparative study of filter-passing bacteria and viruses, beginning on Dec. 6th at 5 P.M. (all these lectures at the London School of Hygiene); Dr. J. Boeke, professor of histology and embryology in the University of Utrecht, three lectures on innervation problems in the sympathetic system, beginning on Nov. 1st at 5.30 P.M. (at St. Thomas's Hospital); Dr. I. Snapper, professor of general pathology in the University of Amsterdam, three lectures on human pseudotuberculosis, beginning on Nov. 9th at 5.30 P.M. (at the Middlesex Hospital); Dr. Edgar Rubin, professor of experimental psychology in the University of Copenhagen, three lectures on experience and perception, thinking, feeling, beginning on Nov. 23rd at 5.15 P.M.; Dr. Louisa Garrett Anderson, a Fawcett lecture on Elizabeth Garrett Anderson, M.D., on Nov. 25th at 5.15 P.M. (both at Bedford College); Dr. E. Schmiegelow, emeritus professor of otolaryngology in the University of Copenhagen, a Semon lecture on the surgical treatment of chronic cicatricial stenosis of the larynx, on Nov. 4th at 5 P.M. (at the Royal Society of Medicine). Admission to all these lectures is free, without ticket.

Letters to the administrative offices of the new University building should be addressed to University of London: The Senate House.

University of Glasgow

Dr. H. Ellis C. Wilson, professor of biochemistry and nutrition at the All-India Institute of Hygiene and Public Health, Calcutta, has been appointed to the lectureship in pathological biochemistry at the Royal Hospital for Sick Children, Glasgow, in succession to Dr. Noah Morris, who has been appointed to the regius chair of materia medica in the University.

London Society

A meeting of this society will be held at the house of the Royal Society of Arts, 18, John-street, Adelphi, W.C., at 5 P.M., on Friday, Oct. 15th, when Mr. C. E. A. Bedwell, house governor of King's College Hospital, will read a paper on London Hospitals, Past, Present, and Future.

London Hospital

The Schorstein memorial lecture will be delivered by Prof. Arthur Ellis, director of the medical unit at the hospital, on Thursday, Oct. 21st, at 4.15 P.M. He will speak on malignant hypertension.

Royal Institute of Public Health and Hygiene

Three Harben lectures on the theoretical and practical significance of endocrinology will be delivered by Prof. E. C. Dodds at this institute (28, Portland-place) on Oct. 11th, 12th, and 13th at 4 P.M.

William Mackenzie Medal

The custodians of the Glasgow Eye Infirmary have awarded this medal for 1937 to Mr. Leslie Paton for original contributions to ophthalmology of outstanding merit. Mr. Paton will give an address, on varieties of optic neuritis, at the Faculty Hall, 242, St. Vincent-street, Glasgow, on Oct. 29th, when the medal will be presented.

Fellowship of Medicine and Post-Graduate Medical Association

Post-graduate courses for October and November are as follows: dermatology at St. John's Hospital (afternoons, Oct. 4th to 30th and Nov. 1st to 30th); chest diseases at the Brompton Hospital (all-day, Oct. 25th to 30th); urology at St. Peter's Hospital (all-day, Oct. 25th to Nov. 6th); medicine, surgery, and gynæcology at the Royal Waterloo Hospital (all-day, Nov. 8th to 20th); and proctology at St. Mark's Hospital (all-day, Nov. 8th to 13th). Week-end courses will be given as follows: obstetrics at the City of London Maternity Hospital (Oct. 23rd and 24th); infants' diseases at the Infants Hospital (Oct. 30th and 31st); physical medicine at the St. John Clinic and Institute of Physical Medicine (Nov. 6th and 7th); general surgery at the Princess Beatrice Hospital (Nov. 20th and 21st); and chest diseases at the Brompton Hospital (Nov. 27th and 28th). The following courses will be given in preparation for the January M.R.C.P. examination: clinical and pathological course at the National Temperance Hospital (8 P.M., Tuesdays and Thursdays, Nov. 16th to Dec. 2nd); chest diseases at the Brompton Hospital (twice weekly, Nov. 22nd to Dec. 18th); chest and heart diseases at the London Chest Hospital (Wednesdays and Fridays, 6 P.M., Nov. 24th to Dec. 18th); and neurology at the West End Hospital for Nervous Diseases (afternoons, Dec. 6th to 18th). Courses are open only to members and associates, and further information may be had from the secretary of the fellowship, 1, Wimpole-street, London, W.

THE drugs branch of the Home Office should in future be addressed at Drugs Branch, Queen Anne's Chambers, Broadway, London, S.W.1.

Gresham College

Four lectures on physic will be delivered at the college, Basinghall-street, London, E.C., from Oct. 12th to 15th at 6 P.M., by Dr. V. S. Hodson. He will speak on tuberculosis at all ages. Admission to the lectures is free.

Surgical Instrument Manufacturers' Association

The annual dinner of this association will be held at the Holborn Restaurant, London, W.C., on Friday, Oct. 15th, at 7 P.M.

Food Education Society

Dr. M. Bircher-Benner of Zürich will give three addresses, on the principles of therapy according to the laws of life, at the London School of Hygiene and Tropical Medicine, Keppel-street, W.C., on Oct. 25th, 27th, and 29th, at 8 P.M.

Royal Isle of Wight County Hospital, Ryde

On Sept. 24th at this hospital Princess Beatrice opened a new men's ward which has been named after her, and also two recovery wards.

Royal Northern Hospital, London

The Duchess of Gloucester will open the new Beecham laboratories for pathological, bacteriological, and pharmaceutical investigation at this hospital on Oct. 26th.

Hospital for Tropical Diseases, London

This hospital has received 200 lb. of Hadhramaut honey from the Secretary of State for the Colonies. The honey has been sent by a Sultan of the Aden Protectorate.

Psychiatric Demonstrations at St. George's

The senior medical staff of the Maudsley Hospital are continuing to coöperate with Dr. Desmond Curran in giving psychiatric demonstrations at St. George's Hospital to alternate with the neurological demonstrations held by Dr. Anthony Feiling at 5 P.M. on Thursdays. These demonstrations are open to all medical practitioners and medical students without fee.

Dietitian Appointed by Board of Education

The Board of Education have selected Miss E. A. Langley, who is at present organiser of school meals for the London County Council, to fill a new post on their staff as inspector of the arrangements made by local education authorities for the provision of meals. This appointment of an experienced dietitian, who will coöperate with the Board's medical staff, is a further step in the campaign for improving the nutrition of school-children.

London Special Hospitals Flag Day

On Tuesday, Oct. 12th, thirty-three special hospitals of London are making a combined appeal to the public. In a letter to Lord Luke, chairman of the London Hospitals Street Collections Central Committee, Sir Samuel Hoare, the Home Secretary, writes: "It is in the public interest that there should be a combined appeal instead of a multiplicity of isolated appeals, and I feel sure that the public will show appreciation of this public-spirited policy and will by their generous response ensure that no single hospital shall suffer by the loss of its individual flag day."

Medical Benevolent Society for East and North Ridings of Yorks

At the twenty-ninth annual meeting of this society held in York on Sept. 29th, at which Dr. R. H. Ashwin (Market Weighton) presided, the hon. secretary, Dr. C. Howard Jackman (York) reported three resignations, two deaths, and five applications during the year, making a total membership of 124, of whom 45 are life members. There was only one application for renewal of a grant. Dr. Jackman deplores the smallness of the membership and emphasises the great need for safeguarding wife and family against the practitioner's sudden death. Mr. D. Matheson Mackay (Hull), hon. treasurer, reported a balance for investment of nearly £200 which would bring the total investments up to nearly £4000. Dr. W. E. Tinley (Sandsend) was elected president and Mr. C. H. Milburn (Harrogate) president elect. The next annual meeting will be held at Scarborough.

Medical Prayer Union

After many years of service, Dr. Tom Jays, principal of Livingstone College, has resigned the honorary secretaryship of this union, and Dr. Neville Bradley, 49, Highbury-park, London, N.5, has been appointed in his place.

North Western Tuberculosis Society

Dr. G. Jessel will give a presidential address to this society on Oct. 28th, at 3.15 P.M., at the Tuberculosis Clinic, 352, Oxford-road, Manchester. The attendance of medical practitioners is invited.

British Postgraduate Medical School

Mr. Reginald Vick will lecture at the school on Oct. 22nd, 29th, and Nov. 5th, at 2.30 P.M., on intestinal obstruction. Prof. I. Snapper of Amsterdam will give a lecture at noon on Nov. 16th on diseases of the bone. Applications for tickets for these lectures should be made to the dean of the school, Ducane-road, London, W.12.

Hospital School for Rheumatic Children

Mrs. Griffith Llewellyn has opened a hospital school for children suffering from rheumatic diseases at Merthyr. The school stands in beautiful grounds, and a grant has been made by the Board of Education towards the cost of alteration and maintenance. The house was the gift of Mr. Griffith Llewellyn.

Leeds Public Dispensary and Hospital

A series of post-graduate lecture demonstrations, open without fee to all members of the medical profession, will be given at this hospital during October, November, and December. They will be held every Wednesday at 4 P.M., beginning on Oct. 13th. The following members of the honorary staff will take part: Mr. A. D. Sharp, Mr. A. Gough, Prof. S. J. Hartfall, Dr. H. G. Garland, Mr. L. N. Pyrah, Dr. R. E. Tunbridge, and Dr. W. Goldie. Particulars of the course will appear weekly in our Medical Diary.

Broadcast Talks

The second of the "Boomerang" series will be devoted to talks by a doctor on patients and by a patient on doctors. These talks will be broadcast on Oct. 18th at 6.45 P.M. (Midland), and on Oct. 19th at 4 P.M. (National). On Oct. 20th at 9.45 P.M. (Northern) there will be broadcast the second of a series of talks on children ill and well which has been arranged jointly by an educational and a medical psychologist. This talk will be about the Boy Who Stole. On Oct. 5th at 3.15 P.M. (television) Prof. Winifred Cullis will introduce a series of talks on the Keep Fit Movement, and viewers will see some of the basic physical exercises arranged by the Federal Council of Recreative Physical Training. Other broadcasts in this series will be seen on Oct. 19th and Nov. 2nd.

Appointments

ALFORD, A. F., M.B. Brist., Medical Officer to the Board of Education.

ANGLIN, A. F. W., M.D. Toronto, Assistant Tuberculosis Officer at the London Chest Hospital.

EVANS, A. M., M.D., D.M.R.E., Resident Medical Officer at the Radium Institute, London.

EVANS, HELEN M., M.R.C.S. Eng., D.P.H., Assistant Medical Officer of Health and Assistant School Medical Officer for Erith.

FRESHWATER, B. B., M.B., F.R.C.S. Edin., Resident Medical and Surgical Officer and Registrar at the Royal Albert Edward Infirmary and Dispensary, Wigan.

LLEWELLIN, DOROTHY M., M.D. Lond., D.P.H., Medical Officer to the Board of Education.

MAYFIELD, R. B., M.D. Camb., D.P.H., Assistant Tuberculosis Officer for Worcestershire.

NICOLE, J. E., L.M.S.S.A., D.P.M., Medical Superintendent of Winwick Mental Hospital, Warrington.

SILVERSTON, J. D., M.B. Durh., D.P.M., Medical Superintendent of the Lancaster Mental Hospital.

STARKEY, J. W., M.B. Edin., D.P.H., Medical Officer of Health and School Medical Officer for Kingston-upon-Thames.

City of London Maternity Hospital.—The following appointments are announced:—

MELLER, H. K., M.B. Camb., Resident Medical Officer;

EDWARDS, A. G., M.B. Lond., Assistant Resident Medical Officer; and

GILBERT, BARTON, M.D. Lond., F.R.C.S. Eng., M.C.O.G., Registrar.

Certifying Surgeon under the Factory and Workshop Acts: Dr. JOHN RENWICK (Cross Hills District, York, W. Riding).

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 11th.

United Services. 4.30 P.M. Surgeon Captain J. Gordon Danson: A Consideration of the Pituitary Gland.

TUESDAY.

Psychiatry. 8.30 P.M. Dr. E. Goodall: Physical Research in Psychiatry, dwelling also on the Need for Research into Hereditary Factors and for a System of Pedigree-keeping. (Presidential address.)

FRIDAY.

Physical Medicine. 4.30 P.M. Dr. F. D. Howitt: The Future of Physical Medicine. (Presidential address.)

Radiology. 6.45 P.M. Dr. R. E. Roberts: Our Heritage. (Presidential address.)

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.

MONDAY, Oct. 11th.—8 P.M., annual general meeting. 8.30 P.M., Mr. J. E. H. Roberts: Sick Nursing—Past, Present, and Future.

HARVEIAN SOCIETY OF LONDON.

THURSDAY, Oct. 14th.—8.30 P.M. (Manson House, 26, Portland-place, W.), Dr. Charlotte Bühler: Child Psychology.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.

THURSDAY, Oct. 14th.—8.30 P.M. (11, Chandos-street, W.), Dr. H. C. Squires: Inaugural Paper to a Symposium on the Contribution of Alfred Adler to Psychological Medicine.

SOCIETY FOR THE STUDY OF INEBRIETY.

TUESDAY, Oct. 12th.—4 P.M. (11, Chandos-street, W.), Dr. H. T. P. Young: Parental Alcoholism as a Factor in Adolescent Crime.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, Oct. 12th.—9 P.M. (Tuberculosis Dispensary, 20, Talbot-road, W.), Dr. Geoffrey Konstam: Diagnosis of Functional Disorders of the Circulatory System and their Prognosis.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF LONDON.

MONDAY, Oct. 11th.—5 P.M. (University College, Gower-street, W.C.), Dr. Phyllis Tookey Kerridge: The Physiology of Hearing and Speech. (First of four lectures.)

TUESDAY.—5 P.M., Prof. J. B. S. Haldane, F.R.S.: Biometry. (First of ten lectures.)

CHADWICK PUBLIC LECTURE.

THURSDAY, Oct. 14th.—5.30 P.M. (Manson House, 26, Portland-place, W.), Prof. W. A. Osborne: The Study of Nutrition.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland-place, W.

MONDAY, Oct. 11th, TUESDAY, and WEDNESDAY.—4 P.M., Prof. E. C. Dodds: The Theoretical and Practical Significance of Endocrinology. (Harben lectures.)

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.

TUESDAY, Oct. 12th.—4.30 P.M., Sir Arthur Hall: Meningitis and Encephalitis.

WEDNESDAY.—Noon, clinical and pathological conference (medical). 2 P.M., clinical and pathological conference (surgical). 4.30 P.M., Mr. A. Bradford Hill, D.Sc.: The Planning and Interpretation of Experiments in Medicine.

THURSDAY.—2.15 P.M., Dr. Duncan White: Radiological Demonstration. 3.30 P.M., Dr. R. E. Roberts: Radiology in Obstetrics.

FRIDAY.—2.30 P.M., Mr. V. E. Negus: Endoscopic Methods of Examination. 2 P.M., clinical and pathological conference (obstetrical and gynæcological).

Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Oct. 11th.—10 A.M., skin clinic. 11 A.M., surgical wards. 2 P.M., operations, surgical and gynæcological wards, medical, surgical, and gynæcological clinics. 4.15 P.M., Mr. Green-Armytage: The Use of Hormones in Gynæcology and Obstetrics.

TUESDAY.—10 A.M., medical wards. 11 A.M., surgical wards. 2 P.M., operations, medical, surgical, and throat clinics.

WEDNESDAY.—10 A.M., children's ward and clinic. 11 A.M., medical wards. 2 P.M., gynæcological operations, medical, surgical, and eye clinics.

THURSDAY.—10 A.M., neurological and gynæcological clinics. Noon, fracture clinic. 2 P.M., operations, medical, surgical, genito-urinary, and eye clinics. 4.15 P.M., Mr. Davenport: Squint.

FRIDAY.—10 A.M., medical wards, skin clinic. Noon, lecture on treatment. 2 P.M., operations, medical, surgical, and throat clinics. 4.15 P.M., Mr. Vlasto: Pain in the Ear.

SATURDAY.—10 A.M., children's and surgical clinics. 11 A.M., medical wards.

The lectures at 4.15 P.M. are open to all medical practitioners without fee.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 11th, to SUNDAY, Oct. 17th.—NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W. All-day course in cardiology. (Open to non-members.)—ST. JOHN'S HOSPITAL, 5, Lisle-street, W.C. Afternoon course in dermatology. (Open to non-members.)—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. All-day course in gynæcology.—ROYAL CANCER HOSPITAL, Fulham-road, S.W. Sat. and Sun., course in cancer.—Courses are open only to members unless otherwise stated.

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle-street, W.C.

TUESDAY, Oct. 12th.—5 P.M., Dr. J. E. M. Wigley: Treatment of Some Common Skin Diseases.

WEDNESDAY.—5 P.M., Dr. I. Muende: Introduction to Histopathology of the Skin.

THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Ringworm Infections. (Chesterfield lectures.)

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL.

MONDAY, Oct. 11th, to FRIDAY.—4.30 P.M. daily, Course in Methods of Examination and Diagnosis.

MONDAY to SATURDAY.—Course in Anatomy and Physiology (second week).

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Oct. 11th.—3.30 P.M., Mr. Williamson-Noble: Papillœdema.

TUESDAY.—3.30 P.M., Dr. Elkington: Motor Symptoms.

WEDNESDAY.—3.30 P.M., Dr. Walshe: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. Riddoch: Sensory Symptoms and their Interpretation.

FRIDAY.—3.30 P.M., Dr. Bernard Hart: Psychopathology and the Psychoneuroses.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Oct. 14th.—2 P.M., Dr. Wilfrid Sheldon: Interpretation of Fevers of Obscure Origin. 3 P.M., Mr. A. Simpson-Smith: Abdominal Swellings in Childhood.

Out-patient clinics daily at 10 A.M., and ward visits at 2 P.M.

TAVISTOCK CLINIC, Malet-place, W.C.

THURSDAY, Oct. 14th.—8.30 P.M., Dr. W. J. O'Donovan: Dermatological Neuroses.

LIVERPOOL PSYCHIATRIC CLINIC, 1, Abercromby-square.

WEDNESDAY, Oct. 13th.—4.15 P.M., Dr. S. Barton Hall Organic or Functional?

LEEDS PUBLIC DISPENSARY.

WEDNESDAY, Oct. 13th.—4 P.M., Mr. A. Gough: Sexual Neuroses in Women.

MANCHESTER ROYAL INFIRMARY.

FRIDAY, Oct. 15th.—4.15 P.M., Mr. John Morley: Surgical Cases.

UNIVERSITY OF SHEFFIELD.

SUNDAY, Oct. 10th, and FRIDAY.—Post-graduate Clinics at the Royal Hospital, Royal Infirmary, and Jessop Hospital.

UNIVERSITY OF GLASGOW.

TUESDAY, Oct. 12th.—4.30 P.M. (Tennent Memorial Building, Church-street), Dr. I. Chesar Michaelson: Diseases of the Central Nervous System.

Vacancies

For further information refer to the advertisement columns

Barking Corporation.—Res. M.O. for Upney (Maternity) Hosp., £350.

Beckenham, Bethlem Hosp., Monk's Orchard.—Res. H.P., at rate of £150.

Bexhill Hosp.—Hon. Cons. Surgeon. Also Res. M.O., at rate of £150.

Birmingham, Canwell Hall Babies' Hosp.—Res. M.O., at rate of £250.

Birmingham and Midland Eye Hosp.—Res. Surg. O., £200.

Birmingham, Selly Oak Hosp.—Radiologist, £800. Also Jun. M.O.'s, each at rate of £200.

Bovey Tracey, Hawkmoor Sanatorium.—Res. Asst. M.O., at rate of £250.

Bradford Royal Infirmary.—Dermatologist.

Brighton Sanatorium and Infectious Disease Hosp.—Jun. Res. M.O., at rate of £250.

Brighton, Sussex Eye Hosp.—H.S., at rate of £150.

British Postgraduate Medical School, Ducane-road, W.—Sub-Dean, £1250.

British Red Cross Society, Clinic for Rheumatism.—Hon. Gynæcologist.

Cambridge, Addenbrooke's Hosp.—Hon. Physician.

Cardiff, King Edward VII Welsh National Memorial Association.—Res. M.O., £350. Also Asst. Res. M.O., £200, for Glan Ely Hosp.

Central London Throat, Nose, and Ear Hosp., Gray's Inn-road, W.C.—Hon. Assts. in the Out-patients' Dept.

Charing Cross Hosp., W.C.—Med. Reg., £150.

Chesterfield and North Derbyshire Royal Hosp.—H.S. to Ophth., and Ear, Nose, and Throat Dept., at rate of £150.

Colchester, Royal Eastern Counties Institution, &c.—Med. Supt. for Branch at Bridge Home, £700.

Colonial Medical Service.—Two District M.O.'s in Cyprus, each £500.

Coventry and Warwickshire Hosp.—House Governor and Secretary, £700.

Denbigh, North Wales Counties Mental Hosp.—Jun. M.O., £350.

Dreadnought Hosp., Greenwich, S.E.—Receiving Room Officer, at rate of £200.

Dudley, Guest Hosp.—Res. Surg. O., at rate of £250–£300.

East Ham Memorial Hosp., Shrewsbury-road, E.—Physician for Skin Dept.

Fareham, Hants, Knowle Mental Hosp.—Jun. Asst. M.O., £350.

Guildford, Royal Surrey County Hosp.—H.S., at rate of £150.

Halifax Royal Infirmary.—Second and third H.S.'s, at rate of £175 and £150 respectively.

Hampstead General and N.W. London Hosp., Haverstock Hill, N.W.—Cas. Surg. O. for Out-patient Dept., at rate of £100. H.S., at rate of £100. Also Physician and Surgeon to Out-patients.

His Majesty's Colonial Service.—Twelve M.O.'s, £600–£700.

Hosp. for Consumption and Diseases of the Heart, Brompton, S.W.—Asst. for Dept. of Pathology, £350.

Hosp. for Epilepsy and Paralysis, Maida Vale, W.—H.P., at rate of £100.

Hostel of St. Luke, 14, Fitzroy-square, W.—Res. M.O., at rate of £200.

Hounslow Hosp.—Hon. Asst. Surgeon to Ear, Nose, and Throat Dept.

Hull Royal Infirmary.—H.P. to Sutton Branch, at rate of £160 and second H.P., at rate of £150.

Ilford, King George Hosp.—Surg. Clin. Asst.

Kent County.—Two Asst. Tuber. Officers, each £600.

Lancashire County Council.—Jun. Asst. M.O. for Wrightington Hosp., at rate of £200.

Leeds Public Dispensary and Hosp.—Cas. O. and H.S. Also H.P., each at rate of £150.

Leicester City General Hosp.—Two Res. M.O.'s, each at rate of £300.

Lincoln County Hosp.—Jun. H.S., at rate of £150.

Liverpool, David Lewis Northern Hosp.—Med. Reg. and Tutor.

Liverpool, Smithdown-road Hospital.—Res. Asst. M.O., £200.

Manchester, Crumpsall Hosp.—Consultant Aurist, at rate of £250.

Manchester, Monsall Hosp. for Infectious Diseases.—Second Res. Asst. M.O., £350.

Manchester Royal Infirmary.—Res. M.O. to Private Patients' Home, £250.

Marie Curie Hosp., 2, Fitzjohn's-avenue, N.W.—Res. M.O., £100.

Metropolitan Hosp., Kingsland-road, E.—Res. Sen. and Jun. H.P.'s and H.S.'s, each at rate of £100.

Miller General Hosp., Greenwich-road, S.E.—Asst. Radiologist, £125.

National Temperance Hosp., Hampstead-road, N.W.—H.P., at rate of £100.

Newcastle-upon-Tyne Hosp. for Sick Children.—H.P. and H.S., at rate of £100.

Newport, Royal Gwent Hosp.—H.P., at rate of £150. Also three H.S.'s and H.S. to Fracture and Orthopædic Dept., at rate of £135.

Northamptonshire County Council.—Sen. Asst. County M.O.H. and Dist. M.O.H., £800.

Norwich, Norfolk and Norwich Hosp.—Hon. Physician.

Oswestry, Robert Jones and Agnes Hunt Orthopædic Hosp.—Res. Surg. O., £350. Also H.S., at rate of £200.

Portsmouth Royal Hosp.—H.S., at rate of £130.

Queen's Hosp. for Children, Hackney-road, E.—Asst. Surgeon. Also M.O. for Whooping-cough Clinic, 1 guinea per session.

Rhondda Urban District Council.—Asst. M.O., £500.

Royal Eye Hosp., St. George's-circus, S.E.—Research Scholarship, £100.

Royal Free Hosp., Gray's Inn-road, W.C.—Asst. M.O. for V.D. Dept., £300.

Royal National Orthopædic Hosp., 234, Great Portland-street, W.—Three Surg. Regs., each £105.

Royal Naval Medical Service.—Medical Officer.

Royal Waterloo Hosp. for Children and Women, Waterloo-road, S.E.—Res. Cas. and Orthopædic H.S., at rate of £150. Also H.P., at rate of £100.

Samaritan Free Hosp. for Women, Marylebone-road, N.W.—Registrar, £130. Also H.S., at rate of £100.

Sheffield Royal Infirmary.—Ophth. H.S., at rate of £120. Also H.P. and H.S.'s to Spec. Depts., each at rate of £80.

Southall Borough.—M.O.H., £800.

South Shields General Hosp.—Deputy Med. Supt., £350.

Surrey County Mental Hosp. Service.—Jun. Asst. M.O., £350.

St. Mary's Hosp., W.—Obstet. Registrar, £100. Also Cas. H.S., at rate of £100.

West London Hosp., Hammersmith-road, W.—Res. Asst. Surg. and Chief Asst. to Dept. for Treatment of Injuries, each at rate of £200.

Westminster Hosp., Broad Sanctuary, S.W.—Radiologist. Also Asst. Ophth. Surgeon.

Woolwich and District War Memorial Hosp., Shooters Hill, S.E.—H.S., at rate of £100.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at St. Davids (Pembroke), Denby Dale (York, W. Riding), and Petworth (Sussex).

Births, Marriages, and Deaths

BIRTHS

BERRY.—On Sept. 28th, at Nuffield House, Guy's Hospital, the wife of Dr. Philip Berry—a son.

BIRCH.—On Sept. 28th, to Marjorie, wife of C. Allan Birch, M.D., M.R.C.P., of 5, Chestnut-close, N.14—a daughter.

BRADSHAW.—On Sept. 30th, at Sevenoaks, the wife of Mr. G. H. Bradshaw, F.R.C.S.—a son.

FINZEL.—On Sept. 27th, the wife of Dr. Harry F. M. Finzel of Bristol—a son.

FLETCHER-BARRETT.—On Sept. 29th, at Wilbraham-place, S.W., the wife of Major K. Fletcher-Barrett, F.R.C.S.—a son.

PRICE.—On Sept. 30th, at Poona, S. India, the wife of Lieut.-Col. R. B. Price, D.S.O., R.A.M.C.—a son.

SHELLEY.—On Sept. 30th, the wife of Dr. Horace Minton Shelley—a son.

MARRIAGES

CAWTHORN—ARNOTT.—On August 9th, at Quetta, Baluchistan, Captain F. R. Cawthorn, I.M.S., M.B., to Miss Elsie Arnott, Q.A.I.M.N.S.

CLARKE—BARFF.—On Sept. 30th, at St. Paul's Church, St. Albans, R. T. Victor Clarke, B.M., to Sybil Mary, eldest daughter of the late Rev. Henry F. Barff and Mrs. Barff, of Oxford.

CLIVE—STRATTON.—On Oct. 2nd, 1937, at All Souls', S. Hampstead, Frederick Temple Clive, M.B., to Hilda Lucy, daughter of Mr. F. Stratton and of the late Mrs. Stratton.

DORLING—BING.—On Oct. 2nd, at St. Mary Abbots Hospital Chapel, Kensington, George Charles Dorling, F.R.C.S., to Phyllis Marjorie, younger daughter of Mr. F. G. Bing and the late Mrs. Bing, of Eastbourne.

RIX—STOCK.—On Oct. 2nd, in London, Reginald Ernest Rix, M.R.C.S., L.R.C.P., L.D.S., to Phyllis Eleanor, only daughter of Mr. and Mrs. E. J. Stock, of Wilby (Wellingborough), Northants.

DEATHS

DONELAN.—On Oct. 5th, at St. James's Court, Joseph O'Conor Donelan, L.R.C.P., eldest surviving son of Thomas O'Conor Donelan, J.P., of Sylanmore, Co. Galway, aged 83.

POWELL.—On Sept. 29th, John Allman Powell, M.D. Dubl., of Cheltenham.

SYMMERS.—On Oct. 4th, at Belfast, William St. Clair Symmers, M.B. Aberd., Emeritus Professor of Pathology, Queen's University, Belfast.

TATE.—On Oct. 3rd, Colonel Gerrard William Tate, C.M.G., D.S.O., M.B. Dubl., late A.M.S., St. Leonards-on-Sea.

WALFORD.—On Oct. 1st, at Walmer, Edward Walford, M.D. Durh., D.P.H., late Medical Officer of Health for Cardiff, City and Port, in his 91st year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 25TH, 1937

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2121; diphtheria, 1320; enteric fever, 45; pneumonia (primary or influenzal), 497; puerperal fever, 40; puerperal pyrexia, 137; cerebro-spinal fever, 15; acute poliomyelitis, 45; acute polio-encephalitis, 2; encephalitis lethargica, 3; relapsing fever, 1 (Waterloo U.D., Lancs); continued fever, 2 (Islington and Marple U.D., Cheshire); dysentery, 78 (57 outside London and of these 25 at Luton); ophthalmia neonatorum, 93. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 1st was 2918, which included: Scarlet fever, 743; diphtheria, 924 (diphtheria carriers, 25); measles, 88; whooping-cough, 338; puerperal fever, 14 mothers (plus 5 babies); encephalitis lethargica, 282; poliomyelitis, 13. At St. Margaret's Hospital there were 26 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 124 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 6 (0) from measles, 1 (0) from scarlet fever, 20 (4) from whooping-cough, 28 (5) from diphtheria, 57 (11) from diarrhœa and enteritis under two years, and 20 (5) from influenza. The figures in parentheses are those for London itself.

Bradford and Liverpool each reported a death from enteric fever. Liverpool had 4 fatal cases of whooping-cough. Diphtheria was fatal in 18 great towns; in 3 cases at Liverpool. Birmingham reported 9 deaths from diarrhœa, Liverpool 5, Hull 4, Sunderland 3.

The number of stillbirths notified during the week was 214 (corresponding to a rate of 32 per 1000 total births), including 42 in London.

NOTES, COMMENTS, AND ABSTRACTS

CARBUNCLES

IN dermatological clinics in this country the advanced carbuncle is nearly as rare as leprosy or sporotrichosis. This type of infection—and usually erysipelas too—is still regarded as coming within the domain of the surgeon, and is referred to him by the casualty department as an "emergency." One reason for this state of affairs is that the surgeon is always on the spot, whereas the dermatologist may not be due in his department or in the wards for a couple of days or more. Whatever the reasons the fact remains and though conservative methods are making headway the general tendency in the treatment of carbuncle has not changed much since the days of Lister. In America the position appears to be about midway between the extremes, for a dermatologist recently dared to criticise the cosmetic result in a case that one of his hospital colleagues had presented as a surgical success. He went further and addressed a questionnaire to 250 surgeons and 250 dermatologists in all parts of the United States. His report, published last March,[1] shows that the questions were answered by 71 dermatologists but only 33 surgeons. As was to be expected, it was found that the surgical approach to the problem was usually with the scalpel or diathermy knife, while the skin physician was more prone to employ X rays, vaccines, bacteriophage, and local applications. According to the (somewhat limited) figures obtained the surgeons took twice as long as the dermatologists to cure their patients, and had a mortality three times as high. But of course one cannot accept these conclusions quite at their face value. For example, Dr. Ayres and his colleagues do not seem to have inquired at what stage the patient came for treatment. It may well have been that the surgeon was not called upon to intervene until the patient was almost moribund, and it is not unlikely that more than one of his patients who failed to survive had previously consulted a dermatologist. The fallacies have not received a fair consideration in this otherwise useful investigation.

HOME TRAFFIC IN DANGEROUS DRUGS

THE annual report prepared by the Home Office for submission to the League of Nations on the working of the Dangerous Drugs Acts during the year 1936 follows the usual lines. The absence of cultivation of opium, the coca plant, and indian hemp in the United Kingdom restricts traffic to importation and exportation and the manufacture from raw materials of narcotic drugs for retail sale. The assurance is again vouchsafed that addiction is not prevalent here; the number of addicts is approximately given as 616, of whom 137 are stated to be medical men. Illicit traffic is not organised here as it is elsewhere, and sporadic cases are usually found among oriental seamen. As in former years only two firms, both in Edinburgh, are authorised to manufacture morphine, heroin, thebaine, and codeine, and only one, at Dagenham in Essex, to manufacture cocaine. Licensed manufacturers and wholesalers are efficiently supervised and inspected. From annual returns made by them the figures for home consumption are calculated and these are the basis for the estimates required to be furnished to the League of Nations. There were in 1936 137 wholesalers licensed to deal in one or more of the drugs, 19 persons licensed as merchants and 14 as brokers in respect of one or more of the scheduled drugs. Where a pharmacist, doctor, dentist, or veterinary surgeon has been convicted of irregularities the Secretary of State is empowered to deprive the offender of authority to possess, supply, or prescribe the drugs. Last year this power was exercised in ten cases; six were medical men, two were dentists, one a veterinary surgeon, and one a pharmacist. There were 60 prosecutions during the year 1936. In 45 cases fines were imposed and in 9 imprisonment.

From the appended statistics it appears that in 1936 248,850 lb. of raw opium were imported, mostly from Turkey, and 110,821 lb. of coca leaves, nearly all from the Netherland Indies. No less than 119,227 lb. of raw opium were exported from the United Kingdom last year, twice as much as in the previous year; the largest consignments were to the United States and Germany. The exports of morphine and heroin showed a reduction on the figures for 1935. It is satisfactory to learn that an arrangement has been concluded between H.M. Government and the Imperial Japanese Government with a view to the discovery and arrest of persons engaged in illicit traffic in dangerous drugs and the seizure of such drugs. In view of the disquieting reports made to the League of Nations of the clandestine production and contraband traffic in the Far East, notably in Manchukuo and Jehol, the concern of Japan in the matter is especially welcome.

[1] Ayres, S., Jun., Anderson, N. P., and Foster, P. D., *J. Amer. med. Ass.* 1937, **108**, 858.

NEW PREPARATIONS

THROMBIN-COAGULANT-MAW is described as a stable preparation of thrombin, the natural clotting agent of blood, and is said to be capable of shortening the clotting-time of shed blood from 6–8 minutes to about 15 seconds. The powder is readily soluble in water, and may be applied in solution on cotton-wool or other dressing. The thrombin on a pad used to apply pressure will rapidly bring into action its clotting power. The powder is sterile and is issued with an ampoule of sterile saline solution. In Thrombin-Coagulant-Maw sterile dressings, the same material is available for immediate use in a variety of forms. The manufacturers are S. Maw, Son and Sons, Ltd., London, E.C.1.

MANDECAL is a preparation of calcium mandelate made by The British Drug Houses Ltd. (Graham-street, London, N.1). The use of the calcium salt of mandelic acid in preference to the sodium or ammonium salts was recommended by E. Schnohr of Copenhagen (THE LANCET, 1937, **1**, 1105), who said that it was tasteless, seldom causes dyspeptic symptoms, and gives a sufficiently acid urine. The manufacturers claim that further tests have shown that it is quite as effective as ammonium mandelate, and more readily acceptable. Mandecal (Compound Calcium Mandelate B.D.H.) is a light pleasantly flavoured powder containing 75 per cent. of calcium mandelate, and it forms an even suspension when stirred into a glass of water.

IODOTAB.—This name is given to Compound Iodine Tablets made by Clay and Abraham Ltd., Liverpool. Their composition is given as: iodine 1/10 grain, dried milk 4 grains, and flavouring q.s., and the manufacturers believe that the regular use of iodine in this form may prevent colds and influenza and alleviate rheumatism.

"TABLOID" FERROUS CHLORIDE CITRATED.—Experiments with various stabilising agents have resulted in the introduction of citrated ferrous chloride, now official in the B.P. Addendum 1936. Burroughs Wellcome and Co. (Snow Hill Buildings, London, E.C.1) issue the preparation as "Tabloid" Ferrous Chloride Citrated, 3 grains, in bottles of 100. The product is sugar-coated and is claimed to resist oxidation and deliquescence under all climatic conditions. It is directed to be taken after food with a copious draught of water.

We are informed by Roche Products Limited (51, Bowes-road, N.13) that "Benerva" synthetic vitamin B_1 is now available for oral administration in the form of small tablets, each containing 1 mg. of pure crystalline aneurin (approximately 500 international units). The 1 c.cm. ampoules now contain 2 mg.